AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED IN 1831.

PUBLISHED WEEKLY BY J. H. SCHULTZ & CO., AT NO. 9 SPRUCE ST., NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. IX., No. 51.] SATURDAY, DECEMBER 17, 1853. [WHOLE No. 922, VOL. XXVI.

☞ The *Mechanical Engineering* department of this paper will be under the charge of Mr. ZERAH COLBURN.

PRINCIPAL CONTENTS.

Pacific Railroad.....801
Finances of South Carolina.....805
Motive Power on the Narrow Gauge.....806
Stock and Money Market.....807
Locomotives for Grades.....810
New Orleans and Jackson Railroad.....811
Mobile and Ohio Railroad.....811

American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO., No. 9 SPRUCE ST.

Saturday, December 17, 1853.

ENTERED according to Act of Congress, in the year 1853, by EDWIN F. JOHNSON, in the Clerk's Office of the District Court of Connecticut.

Railroad to the Pacific--Northern Route.

Its General Character, Relative Merits, etc.

BY EDWIN F. JOHNSON, C. E.

(Continued from Page 789.)

In respect to the several routes proposed for a railroad to the Pacific, through the region of country under consideration, it will be seen, from what has been stated above, that the Sierra Nevada Mountains constitute a much more formidable obstacle to the proposed road than do the Rocky Mountains proper.

They rise to a very great height, from 4000 to 11000 feet above the level of the "Great Basin," or 10000 to 15000 feet above the level of the sea. Col. Fremont, who effected a passage across them in the winter of 1845, found the elevation of the Pass, at the source of the American river, a branch of the Sacramento, to be 9338 feet.

Such is the nearness of this elevated range to the Bay of San Francisco, and such also its height, as to discourage the idea of overcoming it by any direct route for a railroad, to say nothing of the repulsive and impracticable character of the Great Basin, which must be crossed by a line thus located, and consequently, attention has very properly been directed to two Passes near the southern extremity of the range which lead from the lower valley, occupied by the Tulare Lake and its tributaries, (which are distinct from the San Joaquin,) to the valley of the Colorado, known as the Walker and Tejon Passes.

These Passes are about 60 miles distant from each other, and are reached from San Francisco by a route leading at first southerly to the south point of an arm of San Francisco Bay, which juts down in that direction. Thence northwardly around the north side and near the base of Mount Diabolo, a point in the Coast Range, 3750 feet high. Thence turning southerly and rising from the level of the Bay, passes up the valley of the San Joaquin, and through that of the Tulare Lake, to the summit at one of the Passes which separate the waters of the latter lake from those which flow towards the Colorado.

Of the two Passes named, Walkers is the most northerly, and is situated, according to Fremont, in Lat. 35° 17′ N. and Long. 118° 35′ W., and has an elevation, probably, of about 5000 feet above the sea.

It is distant from San Francisco, by the route described, not less than 360 miles, and is only *seventy* miles in a direct line from the shore of the Pacific.

From this Pass three distinct routes to the valley of the Mississippi have been proposed.

One of these, advocated especially by the St. Louis interest, proceeds from Walkers Pass northeasterly to the Vegas de Santa Clara, on the Rio Virgen. Thence easterly to the Colorado. Thence up the Grand river branch of the Colorado, and across by what is called, the Cochatope Pass, in the mountain range between the Colorado and Del Norte, to near Fort Massachusetts, situated in the Del Norte valley, near the latitude of 38° North. Thence, passing by Bents Fort on the Arkansas river, to the Smoky Hill Fork of the Kanzas river, and down the valley of the latter, across the State of Missouri to St. Louis, a distance from San Francisco, of 2100 miles, estimated as follows:

From San Francisco to Walkers Pass..	360	miles.
From Walkers Pass to St. Louis, direct line.....	1582	"
Add to latter for deviations from direct line 12 per cent.; the same as allowed on the northern route.....	158	"
Total.....	2100	"

From the best information to be obtained, it is highly probable that Walkers Pass is impracticable, and that the line must be carried to the Tejon Pass, farther south, which is lower, and which, although not altogether free from difficulties, is much the most favorable of the two. This will lengthen the line, probably, eighty miles, making the entire distance 2180 miles, or say 2130 miles, assuming, what is not very probable, that the line may be shortened 50 miles by crossing the Coast Range south of Mount Diabolo. This estimate makes this line to St. Louis 170 miles longer than the line from Chicago to De Fuca, and 530 miles longer than from the west end of Lake Superior to De Fuca.

The second route referred to, leads eastward from the Tejon or Walkers Pass, across the valley of the Colorado, near the latitude of 35° N., to that of the Rio Grande Del Norte, crossing the latter a little south of Santa Fe, near Albuquerque or Per Alta. Thence on to the valley of the Canadian river, and terminating on the Mississippi at some point south of, and not far from, the mouth of the Ohio.

This is very nearly the route proposed in the Bill of Senator Gwinn, which was before the Senate of the United States at its last session.

That route, as delineated on the map accompanying the Bill, had four termini on the Mississippi and one on the Gulf of Mexico, in Texas, with an extension at the opposite extremity from San Francisco to Puget Sound.

The distance by this route from San Francisco to Memphis, one of the proposed termini on the Mississippi, was estimated at 2000 miles. A computation similar to that made on the route to St. Louis, makes it more than this, viz:

From San Francisco to Walkers Pass..	360	miles.
From Walkers Pass to Memphis, direct.	1604	"
Add to latter for deviations from direct route, say ten per cent., or two per cent. less than upon the route to St. Louis.....	160	"
	2124	"
Add estimated increase by Tejon Pass.....	66	"
	2190	"
Deduct for passing south of Mount Diabolo.....	50	"
Total.....	2140	"

The route from San Francisco to Memphis is, therefore, by this estimate, 180 miles longer than from Chicago to De Fuca, and 540 miles longer than from the west end of Lake Superior to De Fuca.

The Tejon Pass is at the junction of the Sierra Nevada with the Coast Range. At this point there is also an opening in the Coast Range, leading to los Angelos. This opening offers a more direct route to San Francisco than by the Tulare and San Joaquin vallies, but the country between the Coast Range and the Pacific is less productive, not being as well watered in summer as the vallies of Tulare and San Joaquin, which are supplied by the numerous streams from the Nevada Mountains. The western slopes of the latter include, also, most of the *placers* in which gold is found, and it is here that most of the population of southern California will, probably, be situated, and it is only, also, from the San Joaquin valley, that a *continuous* line of railroad can be conveniently carried to the Sacramento valley, north of the Bay of San Francisco, considerations of great importance, all indicating the San Joaquin valley as the most suitable for the location of the proposed road.

The third route leads from Walkers or the Tejon Pass to the mouth of the Gila, on the Colorado, 50 or 60 miles from the mouth of the latter. Thence up the valley of the Gila, and across the elevated Plateau, which liesparallel nearly with the Mexican boundary, to the valley of the Del Norte. Thence down the latter a short distance to El Paso; and from El Paso through the northern part of Texas to the Mississippi, at a point or points whichwill best concentrate the travel and business of the States east of that river.

The distance by this line from Memphis to San Francisco, is greater than by the route last named, and cannot be estimated at less than about 2200 miles. This result is obtained by adding fourteen per cent. only to the direct distance from Memphis to Walkers Pass and increasing the amount by the estimated distance to San Francisco, as given upon the other routes, to the same point. This is also, probably, about the distance by the same route between San Francisco and New Orleans, diverging at Trinity river, in Texas, and passing through Logansport.

If the terminus of this route on the Pacific is fixed at San Diego, instead of San Francisco, the distance to the points named on the Mississippi, will be about 400 miles less, or about 1800 miles in all, and if a terminus be made at Galveston, which is said to be the best port for large vessels in Texas, the distance will be still further reduced about 300 miles, making the distance from Galveston to San Diego 1500 miles nearly, and to the Colorado river 1320 miles.

Of these several routes, the two first traverse the entire breadth, east and west, of the comparatively unproductive region already described, including what has hitherto been called the American Desert, on the east of the Rocky Mountains, and the entire country west of the Nevada Mountains. A region comprising a distance of at least 1000 miles, upon either of the routes, and west of the Del Norte valley is, with few exceptions, a nearly barren region, without timber, and in many places without water, having few attractions for settlers. A region containing no navigable streams, by means of which, materials and provisions can be conveyed to the line of the road while building. On the contrary, materials and provisions for the entire length of both routes must be mostly conveyed from the two extremes of each; and it is only by this tedious and expensive process that a road upon either can be constructed, and the fuel which is to furnish the power by which they are to be operated must be charged with the cost of transportation for hundreds of miles upon the road, and the water, without which the iron horse, all powerful as it is, is impotent, must, for several hundred miles on either route, after being sought for in vain from the barren sands beneath, or the brassy heavens above, be obtained at great cost by digging deep into the earth, or by forming artificial channels leading from the streams where the flow of water is permanent, to convenient points on the line of the road.

Such is the general character of the two most northern of the three routes leading from Walkers or the Tejon Pass to the Mississippi, either of these being longer than the northern route from Chicago to the Pacific, even should their directness be improved by the finding, which is not at all probable, a practicable Pass across the Nevada Mountains by the valley of Owens Lake and Kings river.

Either of these routes, estimating from the Mississippi river to San Francisco, have a much greater rise and fall in the aggregate than is found on the northern route. This will be apparent so far as the northernmost of the two routes is concerned, when it is considered that the summit between the waters of the Del Norte and Colorado is probably, not less than 8000 feet above the sea. This summit is 300 miles, nearly, north of San Felippe, where the Del Norte, by Col. Emory's measurement, is 5158 feet above the sea. By his measurement, also, the valley of that river for some distance below San Felippe to near the Mexican boundary is inclined at the average rate of six feet, nearly, per mile, and as rivers usnally descend most rapidly near their source, it is not unreasonable to suppose that the valley above San Felippe rises at the average rate of at least 9 feet per mile which gives for the probable elevation of the summit the amount above stated.

The elevation of the surface at the Vegas de Santa Clara, west of the Colorado, according to Fremont, is 5280 feet. The Colorado at the crossing, or at the point rather where the line would leave that river, is not higher, probably, than about 3000 feet. Add to this the ascent of the Nevada summit at Walkers Pass, or the Tejon Pass, and the descent therefrom to the Pacific; also the rise and fall incurred in passing from the valley of the Smoky Hill Fork of the Kanzas to that of the Arkansas, and from the latter to the valley of the Del Norte, and in surmounting the many secondary ridges or ranges into which the surface of the country is broken for the entire distance from the Del Norte valley to the Pacific, and it makes, at the lowest reasonable estimate, a total rise and fall, as stated above, greatly exceeding what will be encountered upon the Northern route.

If a comparison is made in this respect with the next route passing near Albuquerque south of Santa Fe, a similar result will follow; showing, probably, if any thing, a greater difference in the total rise and fall in favor of the Northern route. Upon this route the same Pass over the Nevada Mountains may be adopted. The Colorado must be crossed lower down or nearer to its mouth, and consequently at a much lower level, that river having but little descent, comparatively, below the parallel of 35°. There is at present no evidence by which a lower summit can be inferred between the Colorado and the Del Norte. The line crosses the Del Norte at a lower level, and the ascent may be greater in leaving the valley of that river to pass over into that of the Mississippi. Altogether the entire rise and fall on this route will, probably, be found to be as great, if not greater, than upon the route next north leading to St. Louis. In addition to this it should be noticed that the terminus, on the Mississippi, of this route at Memphis, is farther removed from New York city than is St. Louis, an objection which applies with still greater force to the third line near the Mexican boundary.

This latter line has features which are different from the two last named. After leaving Walkers or the Tejon Pass, it descends nearly to the level of the sea at the crossing of the Colorado. From thence, unless permission is obtained to carry it over better ground through Mexican territory, it must be kept in the valley of the Gila until it attains a suitable point in the latter for passing on to the great plain which extends through to the Del Norte, and which is supposed to have an elevation of about 4500 or 5006 feet above the level of the sea.

From this plain, which is covered with detached or isolated ridges or mountains, and which from its low elevation marks the division between the Rocky Mountains on the north, and the Mexican Andes or Cordilleras, the line descends the valley of the Del Norte to El Paso, which is elevated, by barometric measurement, 3812 feet above the sea. Thence rising from and leaving the Del Norte valley it traverses the northern portion of Texas and has a rise and fall, when it reaches the Mississippi, as great, probably, if not greater, than is encountered on either of the two routes next north of it; so that in this particular and in that of distance, it has no advantage over either of those routes, estimating from the Mississippi at one extreme, and San Francisco at the other.

In another view it posesses advantages which do not attach to the other two routes named, and which will, probably, be considered as entitling it to more consideration. Those consist in its entire freedom from snows, and in the connection which can be made from it with San Diego on the Pacific, and the Ports of Texas on the Gulf of Mexico, and also with the Gulf of California. This route, from all accounts, passes from the Mississippi to the Del Norte through a generally fertile region, very well supplied with timber for two thirds of the distance, to where it meets the southern part of the Llano Estacado or Staked Plain but west of the Del Norte to San Diego, a distance by the line of the road of probably 800 miles, the country, according to Gen. Kearney, is "destitute of timber, producing but few cottonwood and mesquite trees" and "very little grass or vegetation." This portion traverses the high

and dry plain described between the Del Norte and the Gila, and the sand plains and deserts which extend from the lower part of the valley of the Gila to the Pacific; features, which upon this route and the two next north of it, present difficulties and obstacles to the construction and successful operation of a railroad, of a nature far more serious than can possibly be experienced from snows upon any of the other routes. To this should be added the apprehensions in regard to the character of the climate, which, whether they have any just foundation or not will serve to enhance greatly the cost of the work, and when finished, will, at certain seasons, induce travellers to give their preference to a more northerly route, if such a route is offered for their choice.

The connection with San Francisco by this route may be shortened, as described in the case of the two routes to Memphis and St. Louis, by passing on the west instead of the east side of the Coast Range. The objections which were urged to the adoption of this course also apply to this route. The distance by it from Galveston to the Colorado is between 1300 and 1400 miles, and should a shorter connection be made with the Gulf of California in what is now Mexican territory, by carrying a line from some point not very far to the east of the San Pedro branch of the Gila across the Province of Sonora to the nearest point on the Gulf, the distance from ocean to ocean will still be from 1200 to 1300 miles.

A line thus located may possess some importance in reference to the trade with Australia and the islands of the South Pacific, but even this importance is greatly lessened in view of the undoubted superiority of the shorter lines situated farther south, across the Isthmus for accomplishing the same object.

It is quite evident that this route, notwithstanding it has superior merits in a commercial and military view, and in its entire freedom from snows and its less distance from ocean to ocean, compared with the two next north of it, does not, it must be obvious from all that has been said, possess the characteristics which are requisite to render it the great commercial thoroughfare between the Atlantic and Pacific, to an equal degree with the Northern route. On the contrary it is exceedingly doubtful, as will be shown hereafter, whether if constructed it can command any very considerable portion of the business and travel between the Bay of San Francisco and the leading cities of the Atlantic.

In respect to the time required for building and the cost of construction of the several routes, there will be found a vast disparity in favor of the Northern route, compared with either of the other routes named.

As already stated neither of the routes leading to San Francisco can be approached at any intermediate point between the Mississippi or Missouri and the Pacific, for the delivery of materials or supply of provisions, unless it be at one point on the most southern line near where it crosses the Colorado. At every other point on this route, and at all points on the other two, the iron rails with their fixtures, the materials for the stations and depots and the provisions for the sustenance of the laborers must be transported from the extremities of the road, or otherwise conveyed by teams from distant points at a very great cost.

In another place an opinion has been expressed as to the probable cost, under certain circumstances, of the Northern route and of the branch of 220 miles connecting it with Lake Superior. In that estimate the entire cost is placed at $100,000,000.

This estimate is, of course, based mainly upon such descriptions of the country as were most reliable, and is according to the best judgment of the writer, who has had no inconsiderable experience and knowledge of the cost of railroads in various portions of the country for the last twenty-five years.

An opinion formed in a similar manner, upon data of a like character, in respect to the Southern routes, makes the probable cost of either, vastly greater than that of the Northern route. This results from their greater length; the less favorable character of the surface; the probable greater amount of rock; the almost total absence of timber for much of the distance; their inaccessibility; the greater difficulty of securing labor; and the very much greater length of time required for their construction, producing a large interest account, and preventing early returns upon the capital invested.

This is true of the routes from St. Louis and Memphis crossing the valley of the Del Norte. It is also in a great measure true of the most southern route.

No very correct or satisfactory opinion can be formed of the probable cost of either of the lines leading from St Louis or any of the points named south of that city, to San Francisco or San Diego, owing to the peculiar character of the country west of the Del Norte, since in all the varieties of railway construction in this country, or in Europe, no parallel can be found to the circumstances which there exist on those routes.

Upon each of them for a distance of 700 miles and upwards, during that season when the sun is most powerful, scarcely any rain descends to moisten the dry and parched ground, and lay the the clouds of dust which are raised and swept by the winds over its treeless surface, and the little that falls at other seasons is not sufficient, in most places, to produce any appreciable effect upon the thirsty soil, and none at all where the surface is of the character represented in the vicinity of, and for a number of miles west of, the Colorado, viz: a waste of drifting sands unstable and changeable, nearly, as the waves of the sea.

In a region of this character, it remains yet to be ascertained, how much labor is required to form embankments and excavations of given dimensions, and fortify them, if it be possible, against external influences, so that both may not again be speedily obliterated or rendered comparatively useless by the winds of Heaven.

It remains also to be ascertained what plan of construction is the best for the track and for the buildings and other appendages of the road. Whether timber under its necessarily great cost can be used with propriety to any extent instead of stone or metal, in forming the track, and for other purposes, and if so used, will be sufficiently secure from destruction by fire in those arid wastes, or whether in the absence of the *bois de vache* or "buffalo chips," which will become very scarce in the immediate vicinity of the railroad, the Indian, (still the principal tenant of that uninhabitable region,) will hesitate to obtain from the material of the road the means to cook his hstdy meal, or warm, in winter, his shivering limbs.

It remains also to be ascertained, whatever plan of construction may be adopted, what is the actual cost of labor, of materials, and of provisions, etc., under the great and extraordinary inconveniences and disadvantages which will necessarily surround and encumber the execution of the work. And should it finally be completed, it remains to be seen what will be the actual cost of operating and maintaining under the great disadvantages which must forever exist, and to appreciate which, the past history of railroads affords no antecedents, or any evidence upon which a correct judgment can be formed, further than the certain assurance of the cost exceeding greatly the limits of all past experience.

This is the true aspect necessarily presented by the subject when the question of cost of either of the three routes named is seriously considered, and cannot be changed unless it shall appear that whatever has been written of the country is untrue or the facts have been greatly exaggerated and distorted, or unless, what is about equally probable, Providence shall interpose and remove that great barrier, the Cordil'eras of California, and compel, also, the trade winds to distribute their treasures in a less partial manner over the entire region from the Pacific to the Rocky Mountains.

On the subject of cost, therefore, the only conclusion at which it is at present possible to arrive, is, that all things considered, including difference in climate and other circumstances named, either of the three southern routes must cost very much more, mile for mile to build, than the northern, and will cost, also, very much more to operate and maintain, and in arriving at this conclusion it is not forgotten that the northern route has also its difficulties. That on portions of it there is a scarcity of timber, and in some few places, perhaps, of water, and that the conveyance of materials, etc., on much of the line, will be attended with unusual expense, but aside from these the work possesses no extraordinary character, and there is no good reason to suppose that it can very much, if any, exceed the limits of an estimate as liberal as the one herein presented. The country through which this line passes is, in general, susceptible of improvement, and will be settled, probably, about as fast as the road can be built; a circumstance which, while it will contribute greatly to the business of the road, will add to its security, and materially lessen the expense of operating and maintaining it.

That this is a just conclusion is evident from the fact, that even now the tide of emigration and settlement is setting more strongly in that direction than any other under the combined attraction of soil and climate, and this movement will be greatly accelerated whenever the line of railroad is completed, as it soon will be, direct from Chicago to the Mississippi, and more especially when it is known that a railway is to be constructed upon the proposed northern route to the Pacific.

It has been stated that the portion of the most southern route, from the Mississippi to the Del Norte passes through a region of country possessing many attractions for settlers, a region which will *in time* undoubtedly fully justify the construction of a railroad for its accommodation.—

West of the Del Norte, the country has few attractions of an agricultural character, but the mountains and the vallies on either side of the Gila are said to be rich in minerals and in the precious metals. To obtain suitable access to them and to fulfil in a proper manner our treaty relations with Mexico, a railway to the Valley of the Gila or the Del Norte is important; but beyond this it is difficult to perceive any present necessity or advantage commensurate with the expense for such an improvement, a conclusion in which our readers will more readily acquiesce when they come to see from the remarks which follow the degree of interest, the State of California really has in such an improvement.

With respect to the other lines projected from the Mississippi or Missouri rivers towards the Colorado Valley, they will, if judiciously located, and extended so as to keep a proper pace with the movement of the population, be well sustained in their course to the Rocky Mountains, but beyond these no inducements exist for their extension, or are likely to exist for many years to come; unless at a few points where there are very favorable passes, it shall be found expedient to enter the borders merely of the immense waste which lies beyond.

Under an enlarged commercial view of the subject the more populous of the States lying to the East of the Mississippi, have very little interest comparatively in the adoption of any central or more southern route from that river to the Pacific.

To illustrate the truth of this latter position let it be assumed, that San Francisco is a point on the Pacific as desirable to be reached as the Straits of De Fuca,—that its distance from St. Louis for instance by any practicable route is no greater than the distance of De Fuca from Chicago; that the cost of constructing and maintaining and operating a railroad upon the former route is no greater than upon the latter, with no more elevation to be overcome—that the country through which the former passes is equally productive with the latter, and will afford a revenue from a way business in time equally great, all which assumptions are untrue, what then would be the aspect which the question would present, and which of the points St. Louis or Chicago would be the most convenient and easy of access by the mass of the population between the Mississippi and the Atlantic?

The question is very easily answered by a reference to the map and drawing thereon a strait line connecting the two cities of St. Louis and Chicago, and from a point midway on this line drawing another as AB in a south-easterly direction perpendicular to it, which it will be seen meets the Atlantic in the vicinity of Wilmington, N. Carolina. Any point in this latter line is evidently equidistant from St. Louis or Chicago and hence all places to the north of it, must be nearer to Chicago than to St. Louis.

The portion of the population of the United States which is thus situated nearest to Chicago comprises two-thirds of the whole. That section of the Union also includes much the greatest portion of the capital of the country, and at least seven-eighths of its commercial and manufacturing interest; branches of national industry which will contribute most to the business of the road when built.

If the mouth of the Kanzas river is assumed as the eastern terminus of the proposed central road, the distance from it to San Francisco, will probably be found as great as from Chicago to De Fuca, the latter route still possessing all the other important points of superiority, enumerated above. Indeed if a point be taken far enough west on the route from St. Louis to San Francisco, to place that route on a par with the Northern route, in respect to distance, gradients, expense of constructing and operating combined, to say nothing of the inferiority of San Francisco, as a terminus compared with De Fuca. and if from that point a direct line be drawn to Chicago, as is done upon the map from St, Louis to Chicago, and this line be bisected by another at right angles to it drawn to the Gulf of Mexico, it will be seen that, as between the two routes named, nearly every State east of the Mississippi is nearest to the Pacific by the Northern route.—In fine, if the States east of the Mississippi were expunged and St. Louis stood the acknowledged best point for the eastern terminus of the proposed road, the very best route that could be selected from it to the Pacific, would be the Northern route.

Chicago is not only situated the nearest to the most populous and most commercial and manufacturing portion of the Union, and also to the Canadas, which will contribute largely to the proposed road, but it has the great advantage of a position at the extreme limit of navigation of the Great Lakes, a navigation which is so much cheaper than the cheapest conveyance by railroad, as to attract by a force which cannot be resisted most of the freight passing between New York and the Pacific, over any route leading from St. Louis, so that in comparing the Northern with the St. Louis route it would be the most correct to assume the latter as terminating at Chicago, in which case the disparity between the two in favor of the Northern route will be still more apparent.

This view of the subject exhibits in a striking manner the great disparity between the two routes, and presents in a strong and clear light the superiority of the Northern route as compared with any more southerly route proceeding from St. Louis to the Pacific.

St. Louis has not only not the advantage in position in its relation to the leading cities of the Atlantic as Chicago, but any route passing from it to the West has no such invaluable feature as is possessed by the Northern route, in the opportunity it affords for a connexion with the navigation of the Lakes, by the branch to Lake Superior, which reduces the distance by railroad between that navigation and the Pacific to not more, probably, than 1600 miles; neither can it command in so great a degree the European trade and intercourse, with Asia across the continent, which must constitute a large portion of the business of the Northern route and add greatly to its revenue; a trade which will yield larger profits upon the Northern route, just in proportion as the expense of carrying upon that route is less, in consequence of the less cost and less expense of operating and maintaining it as compared with the more southern routes.

The attention of the English government and of English capitalists is already seriously directed to the subject of a communication by railroad across the continent from the Great Lakes, and should the Northern route not be built, a road designed to accomplish the same object will undoubtedly at no very distant day be attempted within the British possessions, on ground, which although not by any means as favorable as is to be found within our own borders, is still sufficiently favorable to render a road constructed upon it superior, in many respects, probably; to any of the more southern routes, and upon which if a road is built it will command somewhat more than the *lion's* share of the Pacific trade.

Such is the great advantage in position of the Northerd route as a commercial thoroughfare, such the character of the country through which it passes, connecting as it does by the best route the most important points on the Atlantic and Pacific, and touching in its course the most populous and growing portions of the Mississippi and St. Lawrence vallies, that if either of the proposed lines to the south of it were previously constructed by government aid, the force of circumstances and private enterprise would in time cause it to be built, even if our English neighbors should attempt a similar communication; and when built it would become the leading channel of communication between the two oceans.

It has been stated that neither of the rontes proposed leading from San Francisco to the Mississippi, could, if built, command the entire trade and travel between the Bay of San Francisco and the Atlantic. Transportation by sea being very much less expensive than by railroad, the routes by the Isthmus notwithstanding the greater distance, will doubtless continue to participate largely in the trade between the points named. This will be especially the case when the construction of the canal connecting the two oceans is accomplished, a work which if it proves as feasible as represented, is deserving of more consideration than any other of the Isthmus projects, and will, in all probability, take from them whatever of interest the North American State might otherwise have in their construction.

Such also are the physical characteristics and probable future commercial relations between the several portions of our country on the Pacific, that a communication by railway connecting California with Oregon and Washington will be found indispensable. Upon the map of Senator Gwinn, already alluded to, a line is projected extending from the Bay of San Francisco to Puget Sound, and it is understood that a grant of lands will be solicited from Congress for its accomplishment.

If a practicable passage can be found from the upper part of the valley of the Sacramento to that of the Willamette or of the Fall River, it cannot be long before it will be occupied for the purposes of a railroad; and when so occupied a communication will be at once opened, by which the population of California will be able to avail themselves of the great facilities afforded by the Northern route for communicating with the eastern States of the Union.

The ground at the northernmost sources of the Sacramento is undoubtedly quite elevated, but it can scarcely be so high as to make the entire rise and fall from the Sacramento valley to Lake Superior or Lake Michigan, equal to what it is by

either of the southern routes to the Mississippi. Col. Fremont, who passed up the valley of Fall River, describes it as having a rich soil covered with noble forests. He found the elevation where he left it near its source 4000 feet above the sea. Between the sources of the Fall River and the Sacramento are interposed those of the Klamath which flows in to the Pacific a little north of Humboldt harbor.

A road extending from the Sacramento valley, which is the most populous and productive portion of California, and carried from thence along the valley of Fall River and across the high prairie plains east of the Columbia to the valley of Clark's River, will connect with the Northern route at a point which will make the distance by railway from the Bay of San Francisco to Lake Superior not more than 2100 to 2200 miles; a distance no greater than by either of the proposed southern lines from San Francisco to the Mississippi, and possessing in comparison with the latter many and great advantages.

If instead of a railroad communication between the Bay of San Francisco, and Oregon and Washington, reliance is placed on the communication by water with the Ports of the latter, the Northern route will probably still prove the best and most eligible of the inland routes from that Bay to the Atlantic States.

The distance from San Francisco to the mouth of the Columbia by water is about 600 miles, and from the latter to Lake Superior, as estimated, is 1750 miles, or 2350 miles in all. This is very little greater than the distance from San Francisco to St. Louis, and probably less than from San Francisco, to Chicago by the St. Louis route. The former is very much the cheaper route of the two for transportation. Only 1750 miles of railroad conveyance to Lake Superior the remainder being ocean navigation and 2110 miles only to Chicago; while from San Francisco to Chicago the entire distance by railroad is not less than 2430 miles; nearly 700 miles more than to the west end of Lake Superior, a point as near to the Atlantic by the unrivalled navigation of the Lakes as is Chicago.

From the Bay of San Francisco to Chicago the distance by railroad as estimated by the Northern route is 2560 miles. This is 130 miles more than the estimate between the same points by the way of St. Louis. If instead of the Bay of San Francisco, a point to the north of it in the Sacramento valley is selected, nearer to the centre of population of California, the distance will be very nearly the same as on the two lines to Memphis and St. Louis, but the Northern route will have in respect to the latter this decided advantage.

It passes through in its entire extent, a country susceptible of improvement and settlement, and will consequently transact relatively a larger way business.

For 1300 to 1700 miles of the distance it forms a part of what must be by the immutable laws of cause and effect, the great commercial inland route of the continent, the highway between the northern Atlantic and Pacific, a thoroughfare such, probably, as the world has never witnessed, transporting annually its hundreds of thousands of passengers and a vast amount of freight.

This being its character and the expense of transportation by any medium of intercommunication being invariably less, as the amount of business to be done is greater, it follows that the cost of transport by this route from San Francisco to Lake Superior or to Chicago will be less than it can be on any other route from the same point to the Mississippi. Add to this the greater cheapness of transportation during the season of navigation from Lake Superior to the leading cities on the Atlantic, compared with that from the Mississippi to the same points, and it gives to the Northern route as a means of communication between California, and the older States of the Union east of the Mountains, a character which cannot be surpassed by any other inland route, from the Bay of San Francisco to the Mississippi.

The cost of transportation will not only be less upon the Northern route in consequence of the greater amount of business done upon it, but it will be a cheaper road to operate and to maintain, and so much cheaper as to lessen materially the charges for transportation, if those charges on the several routes are made with reference to a fair remuneration for the expenses incurred and capital invested. This follows from its having, in general, easier gradients, a much less amount of elevation to overcome, in the aggregate, on the main line from the lakes to the Pacific; the cost of fuel, provisions and materials, for repairs of road and engines will be less, and all other expenses incident to the operation and maintainance of the road will also be less.

It will not only be the cheapest inland route for transport between the States east of the Rocky Mountains and the Pacific, but it will be the most expeditious route for travel. The easier gradients, and less elevation, and the more complete and efficient equipment upon a road doing a large business, will enable it to maintain a higher speed, and it will be subject to fewer contingencies in respect to the regularity of movement of its trains, and it will be less liable to interruptions from snows, and floods, and drifting sands and other causes, than the more southern routes.

Irrespective of a connection with the northern route and a communication by means of it with the Atlantic States, the population of California have a deep interest in securing, if practicable, a line of railroad direct from the Sacramento valley to Oregon and Washington. Such a road will give to them direct access to the timber and agricultural regions of the latter, and in a military view, will give to them the means of defence, which cannot be so well or efficiently obtained in any other way. The population which is gathering on the Pacific coast, and is rapidly increasing in numbers, is, even at this time, probably, sufficiently numerous to resist any hostile force which can be brought to bear upon it by sea. All that is required is a line of interior communication by railroad and telegraph, parallel with the seaboard, by means of which the forces of the country can easily and quickly be transported to the exposed points, which are few in number, and the erection at proper points of a few marine and floating batteries, and the establishment, also, at convenient points of depots containing arms and munitions of war. By adopting this course, California, while securing for itself what will conduce most to its advantage in a military view, is at the same time, doing that which will contribute also most to its advantage commercially, in securing a direct connection with the territories north, and with the best inland route to to the leading States and cities on the Atlantic.

To be continued.

Finances of South Carolina.--Public Debt and Assets.

5 per cent Fire Loan Bonds, payable in London, '58 and '68	$937,777 78
6 per cent Fire Loan stock, payable in '60 and '70	865,590 15
6 per cent of 1839, (balance past due not bearing interest)	8,418 30
5 per cent 1838, balance	45,214 34
3 per cent at nominal value, $114,438 40, but at market price would amount to,	73,986 19
Total	$1,870,986 76

The treasury has paid from the sinking fund, since 1st of October, $6,032 50 of the six per cents of 1839, reducing the balance to $2,385 80. The bank also holds of the five per cent stock of 1838 the sum of $6,678 11, and also $7,441 53 of three per cents, which was purchased with the sum of $4,668 16. The amount of indebtedness is diminished by these several payments and purchases.

The assets of the State consist of the bank and various railroad stocks. The assets under the charge of the bank may be summarily set down as follows:—

Total funds in the bank, as exhibited by the annual statemeut 1st October	$7,919,932 49
Deduct bank liabilities, issues, deposits, &c.	4,086,590 22
Balance, being assets, the property of the State	$3,833,342 27
South Carolina railroad and bank stock	641,000 00
Greenville Railroad Company	348,000 00
Wilmington and Manchester Railroad Company	200,000 00
Charlotte and Columbia Railroad Company	69,200 00
King's Mountain Railroad Company	50,000 00
Laurens Railroad Company	84,000 00
Total	$5,175,542,27

In addition to the funded debt due by the State, there is due to the bank the sum of $177,691 22 for cash paid to the South Carolina Railroad Company, when $25 per share on the stock of that company was called in. As the whole par value of the stock is set down among the assets of the State, it is necessary to notice the debt in an estimate of her finances.

The profits of the bank during the year have amounted to $330,000, exceeding the profits of the previous year $21,594 93. From these profits have been paid the fire loan debt, $100,963, and the balance carried to the sinking fund amounts to $229,037. The account exhibits a larger balance than usual; but the bank has advanced to contractors for arms, &c., about $51,000, which is a set off against this balance. The sum of $75,500 has also been advanced to the Greenville Railroad Company, which is the amount of the assessment on the stock held by the State in that company, and which, if paid by the State, will make a further reduction of the cash balance in the treasury. The bank holds the notes of the company, with security for the amount of the advance.

Panama Railroad.

The following is the statement recently put forth by the Panama Railroad Company, showing its financial condition:

Amount of stock issued to date	$2,621,572
do. bonds converted into stock	92,000
do. do. outstanding	808,000
Total	$3,521,572
Bonds to be issued, in conformity with an act of the Legislature, to finish the road	$1,478,428
Capital stock, as per charter	$5,000,000

Motive power on the Narrow Gauge.

By Zerah Colburn.

As a proper sequel to the recent article in the Journal, wherein I gave a detailed statement of the engine equipment of the New York and Erie road, the capacity and weight of the narrow gauge is presented for comparison. The capacity, *live* weight, and speed of the trains, moved by the respective equipments of the two gauges, being nearly equal under the same conditions of grades, &c., it is plain that the broad gauge either employs an unnecessary excess of power, or that additional power is required by reason of increased resistance. The circumstances of the transportation effected upon the two gauges being generally familiar to engineers and railroad men, it is hardly necessary, after the illustrations given in my previous articles, to enlarge upon this point. No more will therefore be attempted than to give a general illustration of the equipment of the narrow gauge; the examples being taken from such roads as afford, from their physical features or business, a fair comparison with the statements already given.

Equipment of Engines of the Northern Railroad of New York, June, 1852.

Name of Engine.	Builder.	No. of Drivers.	Diam. of Drivers. ft.	in.	Number of Trucks.	Size of Cylinder. Inches.	Weight of Eng's in working order. Tons.	Weight on Drivers. Tons.	Weight of Tender Tons.	Whole Wt. E & T. Tons.
Sorel	Amoskeag Co.	4	6	2	4	16×20	23,77	15,06	16,05	39,82
Richelieu	Taunton Co.	4	5	6	4	15×20	23,68	15,30	12,65	36,53
Rideau	Essex Co.	4	5	6	4	16×20	25,80	16,80	15,50	41,30
Oswegatchie	Boston Locomotive Works	4	5	6	4	15×18	21,52	13,20	15,01	36,53
Deer	Lewis Kirk	4	5	8	4	16×20	25,35	16,25	14,25	39,60
Trent	Essex Co.	4	5	0	4	15×18	20,50	13,50	15,11	35,61
Welland	Ditto	4	5	0	4	15×18	24,90	15,15	13,35	38,25
Ottawa	Taunton Co.	4	5	0	4	15×18	21,75	13,35	12,51	34,26
Ontario	John Souther	4	5	0	4	15×20	22,85	14,77	15,00	37,85
Ausable	Boston Locomotive Works.	4	5	0	4	15×18	20,50	13,50	15,11	35,61
Saranac	Ditto	4	5	0	4	15×18	20,50	13,50	15,11	35,61
La Grasse	Ditto	4	5	0	4	15×18	20,50	13,50	15,11	35,61
Chateaugay	Ditto	4	5	0	4	14×18	17,35	11,20	12,50	29,85
Niagara	Essex Co.	4	4	6	4	15×24	26,20	17,10	15 55	41,75
Michigan	Ditto	4	4	6	4	15×24	26,10	17,15	15,70	41,80
Raquette	Boston Locomotive Works.	4	4	6	4	16×20	23,41	14,98	14,03	37,44
Erie	Ditto	4	4	6	4	16×20	23,41	14,98	14,03	37,44
Superior	John Souther	4	4	6	4	16×20	22,20	13 90	13,13	35,33
Genessee	Essex Co.	4	4	6	4	15×20	24,88	15,65	13,35	38,23
St. Clair	Ditto	4	4	6	4	15×20	24,32	15,32	13,30	37,62
Huron	Ditto	4	4	6	4	15×20	24,88	15,65	13,35	38,23
St. Lawrence	Boston Locomotive Works.	4	4	6	4	16×20	22,40	14,90	15,11	37,51
St. Regis	Ditto	4	4	6	4	16×20	22,40	14,90	15,11	37,51
Champlain	Ditto	4	4	6	4	15×20	19,75	12,33	15,21	34,96
Salmon	Ditto	4	4	0	0	14×20	17,25	17,25	12,50	29,75
Little Salmon	Ditto	4	4	0	0	11½×20	13,80	13,80	7,75	21,55
Little Trout	Ditto	4	4	0	0	11½×20	13,80	13,80	7,75	21,55
Chazy	Hinkley & Drury	2	4	6	4	11½×20	....	....	....	....

Equipment of Engines, Fitchburg Railroad, February 1853.

Name.	Builder.	Cylinder.	No. of Drivers.	Diam. of Drivers.	No. of Trucks.	Tube Surface. square feet.	Fire box Surface. square feet.	Grate Surface. square ft.
Vermont	Hinkley & Drury	13½x20	4	5 0	4	526,6	42,4	8,2
Keene	"	13½x20	4	5 0	4	526,6	40,1	8,4
Brattleboro	"	13½x20	4	5 0	4	526,6	40,1	8,4
Lexington	"	13½x20	4	5 0	4	526,6	40,1	8,4
A. Crocker	"	15x20	4	4 6	4	572,7	46,3	8,6
Waltham	"	15x20	4	4 6	4	572,7	46,3	8,6
Tudor	"	11x20	2	5 0	4	334,9	37,9	8,2
Gardner	"	14x18	4	5 0	4	522,3	48,3	8,2
Athol	"	15x20	4	4 6	4	563,5	48,6	8,4
Leominster	"	15x18	4	5 0	4	572,7	49,2	7,9
Concord	"	15x20	4	4 6	4	563,5	48,6	8,4
Shirley	"	14x18	4	5 0	4	513,1	48,3	8,2
Groton	"	15x18	4	5 0	4	572,7	50,7	8,4
Cambridge	"	15x18	4	5 0	4	572,7	50,7	8,4
Lincoln	Boston Locomotive Works	16x20	4	4 6	4	600,2	55,3	9,9
Littleton	"	15x18	4	5 0	4	572,7	50,8	8,4
Boston	Lyman & Souther	16x20	4	5 6	4	649	48,6	8,6
Massachusetts	Rebuilt by Boston Locomot. Works.	15x20	4	5 6	4	806,3	53,6	8,6
Ontario	Boston Locomotive Works	16x20	6	3 10	4	678,3	55,3	10,0
Champlain	"	16x20	6	3 10	4	678,3	55,3	10,0
Fitchburg	"	16x20	4	5 6	4	600,2	54,6	9,7
Charlestown	"	16x20	4	5 6	4	600,2	54,3	9,7
Anthracite	"	16x20	4	4 6	4	596,4	63,5	9,9
Bunker Hill	"	16x20	6	3 10	4	678,3	54,9	9,9
The Union	"	16x20	4	5 6	4	687,2	62,9	9,9

New York Central Railroad Equipment from Utica to Schenectady, December 1852.

Engines.	Wght of Engine in running order. p'ds.	Weight of Tender loaded. p'ds.	Wght of Engine and Tender with wood and water. p'ds.	Diameter of Drivers. ft.	in.	Size of Cylind's. inches.
1	27,015	19,995	47,010	4	8	10½×16
2	36,070	24,055	60,125	4	8	12 ×16
3	49,050	28,500	77,550	5	6	14 ×22
4	54,900	34,880	89,780	5	6	15½×26
5	35,515	26,460	61,975	4	8	12 ×16
6	36,070	24,055	60,125	4	8	12 ×16
7	44,550	26,470	71,020	5	0	12 ×26
8	27,045	19,995	47,040	4	8	10½×16
9	49,150	29,230	69,380	4	3	11½×21
10	34,200	22,885	57,085	4	8	12 ×20
11	34,200	22,885	57,085	4	8	12 ×20
12	41,170	22,885	64,055	4	8	13 ×22
13	37,150	29,230	66,380	5	0	13 ×20
14	44,340	31,480	75,820	5	0	12 ×26
15	43,100	26,470	69,570	5	0	13½×18
16	41,170	22,885	64,055	4	8	13 ×22
17	41,170	22,885	64,055	4	8	13 ×22
18	41,170	22,885	64,055	5	0	13 ×20
19	41,170	22,885	64,055	4	8	12 ×22
20	51,480	28,540	80,020	5	0	14 ×24
21	51,480	28,540	80,020	5	0	14 ×24
22	51,240	28,640	79,880	5	0	14 ×24
23	54,360	28,170	82,530	6	0	14 ×24
24	49,700	28,900	78,600	6	0	16 ×20
25	.....	.....	.....	.	.	.....
26	53,240	35,110	88,350	6	0	16 ×22
27	53,240	35,110	88,350	6	0	16 ×22

Weights of Engines on Reading Railroad, November 30th, 1852.

Name.	Builder.	Weight, lbs.
Atlas	M. W. Baldwin	60,480

Hercules	M. W. Baldwin		60,480
Texas	"		50,400
Alabama	"		50,400
Kentucky	"		50,400
Indiana	"		49,056
Princeton	"		50,400
Montezuma	"		50,400
Amazon	"		50,400
Warrior	"		50,400
Florida	"		50,400
Washington	"		50,400
Empire	"		50,400
Pocahontas	"		50,400
Yorktown	"		50,400
Rio Grande	"		45,024
United States	"		41,664
New England	"		44,128
New York	"		42,784
Ontario	"		42,784
Virginia	"		42,794
Hudson	"		43,904
Niagara	"		43,904
Pacific	"		43,680
Independence	"		43,680
Oregon	"		43,680
St. Lawrence	"		43,680
Constitution	"		43,680
Champlain	"		45,024
Dauphin	"		53,088
Baltic	"		51,296
Perry	"		53,312
Seminole	"		29,344
Baltimore	Ross Winans		62,720
Maryland	"		62,720
Delaware	"		62,720
Ohio	"		62,720
Patapsco	"		55,104
Minesota	"		50,400
Georgia	"		53,984
Louisiana	"		53,536
Iowa	"		56,896
Wisconsin	"		56,448
New Jersey	"		57,120
Mississippi	"		59,360
Connecticut	"		59,360
New Hampshire	"		59,360
Utah	"		58,688
Mohawk	Edward S. Norris		43,456
Genessee	"		43,680
Alleghany	Reading Railroad Co.		53,536
Wyomissing	"		60,256
Pawnee	"		60,256
Swatara	"		60,256
Perkiomen	"		60,256
Tennessee	"		60,256
Powhatan	"		60,256
Illinois	"		62,048
Michigan	"		62,944
Wyoming	"		43,904
Palo Alto	"		46,592
Monterey	"		44,576
Sanatoga	Rebuilt by Read. R. R. Co.		43,008
Mahonoy	"		45,248
Atlantic	"		45,024
Philadelphia	"		45,248
California	"		48,160
Chesapeake	"		44,800
Monocacy	"		36,736
Reading	"		36,288
Schuylkill	"		32,928
Osceola	"		33,152
Huron	"		33,152
Erie	"		33,152
Ontalaunee	"		32,704
Buena Vista	Reading Railroad Co.		37,858
Vera Cruz	"		37,408
Cerro Gordo	"		37,632
Gazelle	Rebuilt by Read. R. R. Co.		24,640
Atalanta	"		23,072
Antelope	"		20,832
Stag	Reading Railroad Co.		32,704
Ariel	"		12,320
Witch	"		11,648
Maine	Boston Locomotive Works.		44,800
Massachusetts	"		45,024
Vermont	"		45,248
Carolina	Newcastle Co.		42,112
Missouri	Newcastle Co		42,112
Columbus	"		41,440
Tuscarora	"		26,432
Pennsylvania	"		25,536
Manatawny	Wm. Norris		30,912
America	"		30,016
Conestoga	Locks & Canals Co.		26,432
Shamokin	"		26,432
Potomac	"		26,432
Roanoke	"		26,432
Engineer	Braithwaite & Co.		19,712
Rocket	"		18,816
Planet	"		18,816
Gowan & Marx	Eastwick & Harrison		24,640
Cambridge	Lewis Kirk		57,120

Equipment of Engines, Penna. Central Railroad, January 1, 1853.

Name.	Number of Drivers.	Size of Drivers. ft.	Size of Drivers. in.	Weight of Engine. pounds.	Weight on Drivers. pounds.
Alleghany	4	4	6	45,275	25,825
Armstrong	4	5		38,675	22,875
Antelope	4	6	6	.....	.....
Atalanta	4	6	6	.....	.....
Beaver	8	3	6	43,350	43,350
Blair	2	6		40,175	21,000
Butler	4	5		38,675	22,875
Bradford	4	4	6	44,800	25,400
Bedford	6	3	6	57,875	42,037
Berks	6	3	6	57,875	42,037
Cambria	4	4	6	40,825	25,320
Clarion	4	4	6	45,275	25,825
Columbia	4	4	6	44,800	25,400
Clinton	4	4	6	44,800	25,400
Clay	2	4		23,350	14,600
Centre	4	4	6	44,800	25,400
Clearfield	4	4	6	44,800	25,400
Crawford	4	4	6	44,800	25,400
Dauphin	6	3	6	57,875	42,037
Erie	4	4	6	44,800	25,400
Elk	4	4	6	44,800	25,400
Franklin	4	4	6	30,650	16,750
Fayette	4	4	6	46,110	26,490
Greene	4	4	6	46,200	26,490
Huntingdon	4	4	6	45,275	25,825
Harrisburg	2	4	6	23,900	12,000
Heisley	4	4		.....	.....
Indiana	2	6		40,175	21,000
Juniatta	4	4	6	45,275	25,825
Lycoming	4	4	6	46,110	26,490
Latrobe	6	3	8	54,000	43,000
Lebanon	6	3	6	57,875	42,037
Mifflin	2	6		40,175	21,000
Mercer	6	3	6	57,875	42,037
Penrose	2	4	6	24,225	12,000
Pike	4	5		47,100	27,480
Susquehanna	4	5		38,675	22,875
Somerset	4	5		47,100	27,450
Union	4	5		47,100	27,450
Venango	4	4	6	44,800	25,400
Wyoming	4	5		36,675	22,875
Washington	6	3	6	34,675	34,675
Westmoreland	8	3	7	50,975	50,975

The weight of the 15 inch cylinder engines of the Fitchburg road, such as the Cambridge, Littleton, &c., is 42,440 lbs.; the weight on drivers being 26,750 lbs., and weight of tender, with wood and water, 25,900 lbs. The weight of the Concord and Athol is 44,110 lbs each, of which 30,810 lbs. are on drivers, The ten wheel engines weigh 48,000 lbs., of which 36,000 lbs. are on the drivers.

The heaviest express engines of the Hudson River road have 16½ inch cylinders, 22 inch stroke, two pairs of 7 feet drivers and truck. Boiler contains 139 tubes, 2 inches diameter and 12 feet long, equal to 873⅓ square feet of tube surface. Weight in running order 55,275 lbs., of which 35,275 lbs. are on drivers.

The heaviest express engines of the Boston and Worcester road have 16 by 20 inch cylinders and four 5½ feet drivers and truck, 637 square feet tube, 58 do. of fire box and 10⅔ do. of grate surface. Weight in running order 47,095 lbs.

Evansville and Illinois Rail Road.

We are gratified to be able to announce, that with anything like auspicious weather, the Evansville and Crawfordsville Railroad will be completed in little over one week from this time to Vincennes. In two weeks certainly, Vincennes and Evansville may claim to be united by Railroad.—It will be a happy consummation, and we are sure, one that the citizens of both places will be delighted to realize. The White River bridge is not yet completed, but the work is rapidly going on. It is now confidently anticipated the structure will be finished by the middle of next January. Until that time, passengers and freight are obliged to be transferred at White River. But this does not cause very much delay, and allows passengers a few minutes opportunity of inspecting the bridge works. The President of the road, Hon. Sam'l. Hall, has recovered his health, and is now active in pushing forward everything in connection with it. We have heretofore been called upon to compliment his industry and faithfulness. He has labored under peculiar difficulties in his office, but in spite of all obstacles is carrying the work forward successfully. There will be no delay in pursuing the work beyond Vincennes, and ere long we will be connected with Crawfordsville and Terre Haute.—*Evansville Journal.*

Share and Money Market.

The Stock Market has shown but little activity for the past week, and whatever tendency has manifested itself has been downward. Our markets are now controlled by the state of the English markets, and prices on this side take their cue from the price of *consols*, which fluctuate accoring to the prevailing rumors in favor of war or peace. The last advices were not deemed satisfactory. Our Roads are in excellent conditon, and there is no doubt that favorable news from Europe would cause a rapid movement upward.

There is little doing in negotiation of new securities. The season of the year is unfavorable to activity in any department of business. For first-class securities the market is firmer, and is, we think, steadily improving. The following statement will show the earnings of several railroads for *November*, compared with the same month of

1852:	1852.	1853.
Hudson River	123,520	88,698
Erie "	50,327	348,838
Few York and New Haven	72,420	54,509
Ohio and Penn	73,427	40,275
Nor. and Worcester	26,652	21,746
Stonington	23,000	15,000
Eight Avenne, (City)	25,379	new.
Sixth " "	26,219	"
Third " "	28,241	"
Rock Island and Chicago.	59,421	"
Cleveland and Toledo	61,443	"
Michigan Southern	165,840	105,599
Cincinnati. Hamilton and Dayton	35,802	27,615
Macon and Western	26,073	27,017
Penn. Central	240,145	134,585
New York Central	460,821	361,859
Cleveland and Pittsburgh,	40,550	29,362

We have at last a Report from the Erie Railroad; or, rather, we have the *loan* of a copy from a friend, for a day or two, (the Company never favoring us with any of their publications); an elaborate, detailed, and, in many respects, a lucid and instructive Report, of some 122 pages:—a Report indicating real *labor*, and, in the main, intending to *convey information*, instead of misleading.

It is the first time that the Company have ever given an account of the history, progress, and system of management of the road. The information the Report contains, and the great labor its preparation indicates, is a striking commentary upon the position that Mr. Loder took last spring, that "the report to the Legislature was *all* that was necessary to give the public an idea of the condition and management of the road"! We are glad to find, that Mr. Loder, in retiring from the Board, carried his peculiar notions with him. We are inclined to believe that the present Report embodies much interesting information which will be *new* to even *him*.

The Report is divided into ten heads, viz.:—

1. The history of the undertaking.
2. A topographical description of the route, and the obstacles which prevent the construction of competing lines.
3. Its tributary roads and water lines within and beyond this state.
4. The resources for business, the trade of the West, and the portion of it due to the New York and Erie Railroad, from its location and facilities.
5. The character of the road, as now constructed, and its cost.
6. An analysis of its present business.
7. A comparison of its business, revenue and expenses, with that of former years, and of other roads.
8. The organization and management of the road.
9. Its financial condition.
10. The probable future revenue and expenses.

Each of these heads is elaborated to nearly the size of the previous Report of the Company. They are followed by a large number of tables, which present the leading characteristics of the road, such as its grades, elevations, and allignment, the amount and condition of its equipments; with others, showing its working economy for the past year; the movement of persons and property, the sources of revenue, the proportion of passenger to freight receipts, of receipts and expenditure, etc. etc. The tables embody a great amount of interesting information in reference to the general subject of railway transportation, useful to this, as well as to other companies. It will constitute a good starting point for future reports of a similar character, and is all the more acceptable for coming so late in the day.

The cost of the road and equipment to the present date, and the expenditures during the past year, are stated as follows:—

On what account.	Present cost.	Expend. of year ending Sep. 30, '53.
Grading, transportation of laborers and materials and gravel and hand-cars,	$12,959,619,97	$2261,889,43,
Superstructure,	2,374,186 08	451,219, 07
Iron	3,764,216 03	896,860 58
Stations, buildings and fixtures, viz.:		
Freight and Passenger Depots	513,362,87	57,887 98
Water Stations and Wood Sheds	254,941 21	66,324 91
Machine and Workshops	233,778 97	33.547 84
Machinery in Shops	161,604 78	28,241 58
Depot and stores in New York	92,974 01	4,029 50
Land, land damages and fences	1,159,515 16	82,149 49
Locomotives and fixtures	1,362,971 45	12,984 16

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of $100.

NAME OF COMPANY.		Miles open.	Capital paid in.	Funded debt.	Tot. cost of road and equipm't.	Gross Earnings for last official year.	Net Earnings for last official yr.	Dividend for do.	Price of Shares.
Atlantic and St. Lawrence	Maine.	150	1,538,100	2,973,700	5,150,278	254,743	113,520	none	80
Androscoggin and Kennebec	"	55	809,878	1,016,500	2,064,458	140,561	80,053	none	30
Kennebec and Portland	"	72	952,621	29?,80	2,514,067	168,114	100,552	none	41
Port., Saco and Portsmouth	"	51	1,355,500	123,884	1,459,384	208,669	.....	6	97
York and Cumberland,	"	20	285,747	341,100	713,605	23,946	11,256	none	24
Boston, Concord and Montreal	N. H.	93	1,649,278	622,200	2,540,217	150,538	79,659	none	35
Concord	"	35	1,485,000	none.	1,485,000	305,805	141,836	8	104
Cheshire	"	54	2,078,625	720,900	3,002,094	287,768	55,266	5	48
Northern	"	82	3,016,634	.....	.....	328,782	163,075	5	47¼
Manchester and Lawrence	"	24	717,543	.....	.....	.....	.....	6½	89
Nashua and Lowell	"	15	600,000	none.	651,214	132,545	51,513	8	109
Portsmouth and Concord	"	47	.....	.....	1,400,000	.....	.....	none	....
Sullivan	"	26	.....	.....	673,500	.....	.....	none	21
Connecticut and Passumpsic	Vt.	61	1,097,600	550,000	1,745,516	.....	.....	none	33¼
Rutland	"	120	2,486,000	2,429,100	5,577,467	495,397	266,539	none	25
Vermont Central	"	117	8,500,000	3,500,000	12,000,000	.....	.....	....	13¾
Vermont and Canada	"	47	1,500,000	.....	1,500,000	Leased to the Vt. C		ent.	100
Western Vermont	"	51	892,000	700,000	.....	Recently	opened.	none	....
Vermont Valley	"	24	.....	.....	.....	.....	.....	none	....
Boston and Lowell	Mass.	28	1,830,000	.....	1,995,249	388,108	130,881	7½	97
Boston and Maine	"	83	4,076,974	150,000	4,092,927	659,001	338,215	7	104¾
Boston and Providence	"	53	3,160,390	390,000	3,546,214	469,656	227,434	6	88
Boston and Worcester	"	69	4,500,000	425,000	4,845,967	758,819	331,296	7	102¾
Cape Cod branch	"	28	421,295	171,800	633,906	60,743	30,056	2½	45
Connecticut River	"	52	1,591,100	193,500	1,801,946	229,004	72,028	5	55
Eastern	"	75	2,850,000	500,000	3,120,391	488,793	241,017	7½	91¼
Fall River	"	42	1,050,000	none.	1,050,000	229,445	99,589	8	106¼
Fitchburg	"	66	3,540,000	112,305	3,623,073	574,574	232,787	6	96¼
New Bedford and Taunton	"	20	500,000	none.	520,475	164,230	43,950	7½	117
Norfolk County	"	26	547,015	819,743	1,245,927	67,251	23,415	none	60
Old Colony	"	45	1,964,070	282,300	2,293,534	322,213	101,510	none	90¼
Taunton Branch	"	12	250,000	none.	307,136	137,406	24,399	8	....
Vermont and Massachusetts	"	77	2,140,536	1,001,500	3,203,333	218,679	18,648	none	13¼
Worcester and Nashua	"	45	1,134,000	171,210	1,321,945	162,109	66,900	4½	61¼
Western	"	155	5,150,000	5,319,520	9,953,759	1,339,873	683,194	6½	98¼
Stonington	R. I.	50	.....	467,700	.....	240,572	110,892	....	66
Providence and Worcester	"	40	1,457,500	300,000	1,731,498	253,690	139,514	6	100
Canal	Com.	45	922,500	500,000	1,400,000	.....	.....	4	65
Hartford and New Haven	"	72	2,350,000	800,000	3,150,000	639,529	294,269	10	118¼
Housatonic	"	110	.....	.....	2,500,000	329,041	168,902	none	....
Hartford, Prov. and Fishkill	"	50	.....	.....	In progres	69,629	.....	none	....
New London, Wil. and Palmer	"	66	558,861	800,000	1,511,111	114,410	.....	....	39¼
New York and New Haven	"	61	3,000,000	1,641,000	4,978,487	806,713	428,173	7	102¼
Naugatuck	"	62	926,000	440,000	.....	.....	.....	8	....
New London and New Haven	"	55	750,500	650,000	1,380,610	Recently	opened.	none	52
Norwich and Worcester	"	54	2,121,110	701,600	2,596,488	267,561	116,965	4½	58¼
Buffalo and New York City	N. Y.	91	900,000	1,550,000	2,550,500	Recently	opened.	none	85
Buffalo, Corning and N. York	"	132	.....	.....	In progres	.....	.....	none	65
Buffalo and State Line	"	69	879,636	872,000	1,921,270	Recently	opened.	....	130
Canandaigua and Niagara F	"	50	.....	.....	In progres	.....	.....	....	....
Canandaigua and Elmira	"	47	425,509	582,400	987,627	76,760	39,360	none	68
Cayuga and Susquehanna	"	35	687,000	400,000	1,070,786	74,241	23,496	none	....
Erie, (New York and Erie)	"	464	10,000,000	24,003,865	33,070,863	3,537,766	1,691,623	7	79
Hudson River	"	144	3,740,515	7,046,395	10,527,654	1,063,659	338,783	none	67¼
Harlem	"	130	4,725,250	977,463	6,102,935	681,445	324,494	5	55¼
Long Island	"	95	1,875,148	516,246	2,446,391	205,068	44,070	none	30¼
New York Central	"	504	25,085,600	10,773,823	33,859,423	.....	.....	....	115¼
Ogdensburgh (Northern)	"	118	1,579,969	2,969,760	5,133,834	480,137	195,847	none	29
Oswego and Syracuse	"	35	350,000	201,500	607,803	90,616	43,609	4	70
Plattsburg and Montreal	"	23	174,042	131,000	349,775	Recently	opened.	none	....
Rensselaer and Saratoga	"	25	610,000	25,000	774,495	213,078	96,737	....	....
Rutland and Washington	"	60	850,000	400,000	1,250,000	Recently	opened.	....	....
Saratoga and Washington	"	41	899,800	940,000	1,832,945	173,545	135,017	none	30
Troy and Rutland	"	32	237,690	100,000	329,577	Recently	opened.	....	33
Troy and Boston	"	39	430,936	700,000	1,043,357	Recently	opened.	none	....
Watertown and Rome	"	96	1,011,940	650,000	1,693,711	225,152	116,706	8	94
Camden and Amboy	N. J.	65	1,500,000	.....	4,327,408	1,388,385	478,413	10	145
Morris and Essex	"	45	1,022,420	128,000	1,220,325	149,941	79,252	7	....
New Jersey	"	31	2,197,840	476,000	3,245,720	603,942	316,259	10	131
New Jersey Central	"	63	986,106	1,500,000	2,379,880	260,899	124,740	3½	....
Cumberland Valley	Penn.	56	1,184,500	13,000	1,265,143	118,617	76,890	5	....
Erie and North East	"	20	600,000	.....	750,000	Recently	opened.	....	125
Harrisburgh and Lancaster	"	36	830,100	713,227	1,702,523	265,227	106,320	8	....
Philadelphia and Reading	"	95	6,656,332	10,427,800	17,141,987	2,480,626	1,251,987	7	81¼
Philad., Wilmington and Balt,	"	98	3,850,000	2,403,276	6,818,839	667,785	883,501	5	78

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of $100.

NAME OF COMPANY.		Miles open.	Capital paid in.	Funded debt.	Tot. cost of road and equipm't.	Gross Earnings for last official year.	Net earnings for last official yr.	Dividend for do.	Price of shares.
Pennsylvania Central	Penn.	250	9,768,155	5,000,000	13,600,000	1,943,827	617,625	....	95
Philadelphia and Trenton	"	30	....	....	....	....	....	....	....
Pennsylvania Coal Co	"	47	....	....	....	....	....	....	102½
Baltimore and Ohio	Md.	381	9,188,300	9,827,123	19,542,307	1,325,563	615,384	7	56½
Washington branch	"	38	1,650,000	....	1,650,000	348,622	216,237	8	....
Baltimore and Susquehanna	"	57	....	....	....	413,673	152,536	....	..
Alexandria and Orange	Va.	65	....	....	In prog.	....	....	....	....
Manassas Gap	"	27	....	....	In prog.	....	....	....	....
Petersburgh	"	64	769,000	173,867	1,163,928	227,595	72,370	7	77
Richmond and Danville	"	73	1,372,324	200,000	In prog.	....	....	....	70
Richmond and Petersburgh	"	22	685,000	....	1,100,000	122,861	74,113	none	40
Rich., Fred. and Potomac	"	76	1,000,000	503,006	1,531,238	254,376	113,256	7	100
South Side	"	62	1,357,778	640,000	2,106,467	62,762	....	....	....
Virginia Central	"	107	1,400,100	446,036	In prog.	176,485	74,902	none	61
Virginia and Tennessee	"	60	3,000,000	1,500,000	In prog.	....	....	none	98
Winchester and Potomac	"	32	180,000	120,000	416,532	89,776	....	12	....
Wilmington and Raleigh	N .C.	161	1,338,878	1,134,698	2,965,574	510,038	153,898	6	....
Charlotte and South Carolina	S. C.	110	....	....	....	....	....	....	....
Greenville and Columbia	"	140	1,004,231	300,000	In prog.	....	....	....	....
South Carolina	"	242	3,858,840	3,000,000	7,002,396	1,000,717	609,711	7	125
Wilmington and Manchester	"	....	....	....	In prog.	....	....	....	....
Georgia Central	Ga.	191	3,100,000	306,187	3,378,132	945,508	508,625	8	115
Georgia	"	211	4,000,000	1,214	....	934,424	456,468	7½	....
Macon and Western	"	101	1,214,283	168,000	1,596,283	296,584	153,697	9	109
Muscogee	"	71	....	....	In prog.	....	....	....	....
South Western	"	60	586,887	150,000	743,525	129,395	71,535	8	....
Alabama and Tennessee River	Ala.	55	....	....	In prog.	....	....	....	....
Memphis and Charleston	"	93	776,259	400,000	In prog.	....	....	....	....
Mobile and Ohio	"	33	879,868	....	In prog.	....	....	....	....
Montgomery and West Point	"	88	688,611	....	1,330,960	173,542	76,079	8	....
Southern	Miss.	60	....	....	....	....	....	....	....
East Tennessee and Georgia	Tenn.	80	835,000	541,000	In prog.	....	....	....	....
Nashville and Chattanooga	"	125	2,093,814	850,000	In prog.	....	....	....	....
Covington and Lexington	Ky.	38	1,430,150	900,000	In prog.	....	....	....	62½
Frankfort and Lexington	"	29	357,218	....	584,902	87,421	44,250	....	80
Louisville and Frankfort	"	65	....	....	....	....	....	....	....
Maysville and Lexington	"	....	....	....	In prog.	....	....	....	....
Cleveland and Pittsburgh	Ohio.	100	1,239,450	1,371,000	2,963,756	194,429	123,306	6	93
Cleveland, and Erie	"	95	....	....	....	....	....	....	....
Cleveland and Columbus	"	135	3,027,000	408,200	3,655,000	777,793	483,454	12	124
Columbus, Piqua and Indiana	"	46	....	....	2,000,000	....	....	....	80
Columbus and Lake Erie	"	61	....	....	....	....	....	....	....
Cincinnati., Ham. and Dayton	"	60	2,100,000	500,000	2,659,653	321,793	200,967	....	106
Cincinnati and Marietta	"	....	....	....	In prog.	....	....	....	72½
Dayton and Western	"	40	310,000	550,000	925,000	Recently	opened.	....	80
Dayton and Michigan	"	20	....	....	In prog.	....	....	....	....
Eaton and Hamilton	"	36	....	....	....	....	....	....	60
Greenville and Miami	"	31	....	....	....	....	....	....	....
Hillsboro	"	37	....	....	In prog.	....	....	....	....
Little Miami	"	84	2,370,784	....	2,634,157	526,746	314,670	10	113
Mansfield and Sandusky	"	....	900,000	1,000,000	1,855,000	....	....	....	....
Mad River and Lake Erie	"	167	2,387,200	1,767,000	4,110,148	540,518	113,401	....	95
Ohio Central	"	57	....	....	In prog.	....	....	....	90
Ohio and Mississippi	"	....	....	....	"	....	....	....	87
Ohio and Pennsylvania	"	187	1,750,700	2,450,000	....	Recently	opened.	....	....
Ohio and Indiana	"	....	....	....	In prog.	....	....	....	....
Scioto and Hocking Valley	"	....	....	....	"	....	....	....	....
Toledo, Norwalk and Clevel'd	"	147	552,000	800,000	1,317,140	Recently	opened.	....	94½
Xenia and Columbus	"	54	1,092,137	119,500	1,257,714	237,506	135,363	15	116
Evansville and Illinois	Ind.	31	....	....	In prog.	....	....	....	....
Indiana Central	"	....	....	....	"	....	....	....	90
Indiana Northern	"	131	....	....	"	Recently	opened.	....	115
Indianapolis and Bellefontaine	"	83	....	....	"	....	....	....	166
Lawrenceburg and Ind	"	90	....	....	In prog.	....	....	....	77
Lafayette and Indianapolis	"	62	....	....	....	Recently	opened.	....	82
Madison and Indianapolis	"	88	1,650,000	750,000	2,400,000	516,414	268,075	10	78
Peru and Indianapolis	"	40	....	....	In prog.	....	....	....	65
Terre Haute and Indianapolis	"	72	632,387	663,100	1,353,019	105,944	71,446	4	108
Rock Island and Chicago	Ill.	....	....	....	....	....	....	....	....
Chicago and Mississippi	"	135	2,400,000	4,000,000	4,600,000	....	....	....	....
Illinois Central	"	....	....	....	....	....	....	....	136
Galena and Chicago	"	92	1,932;361	500,000	In prog.	473,548	286,152	....	122
Michigan Southern	Mich.	315	2,800,000	2,629,000	6,430,246	592,187	293,046	....	120
Michigan Central	"	282	4,000,000	4,067,396	8,614,193	....	....	8	109
Pacific	Mo.	38	1,000,000	none.	In progres	Recently	opened.	....	....

Passenger and Baggage Cars	322,659 62	59,780 84
Freight and other Cars	1,470,402 45	320,048 40
Telegraph	50,081 69	5,385 57
Duane-st. Pier	12,878 86	....
Dunkirk Harbor Improvement	12,066 74	1,505 84
Steamboats and barges on Hudson River	205,586 90	24,675 00
Office Expenses	195,996 63	24,576,24
Engineering	476,878 57	80,733 40
Agencies	148,068 00	80,381 45
Contingencies	172,325 71	93,625 50
Interest on Stock, according to terms of subscription, &c. &c	1,651,694 13	115,254 66
Interest on first Mortgage Bonds paid to State Controller	499,944 17	....
Discount on sale of Bonds	1,765,464 08	....
Construction previous to 1845	1,361,616 13	....
	$31,222,834 21	$4,651,101 44

This statement presents some curious points of contrast to the balance sheet of Sept. 30th, 1852, published at the instance of the company in March last, the credit side of which was as follows:

	1852.
Graduation, masonry and bridges	10,661,624 92
Superstructure, including iron	4,790,322 46
Passenger and freight stations, buildings, and fixtures, included above	....
Land, land damages, and fences	1,077,365 67
Locomotives and fixtures, and snow plows	1,349,987 20
Passenger and baggage cars	262,878 78
Freight and other cars	1,162,745 00
Engineering and agencies	475,821 29
Office expenses in New York, and various offices on the line, salaries of officers, clerks, etc., since 1845, exclusive of transportation department	171,420 39
Steamboats, barges, etc	180,911 90
Duane st. pier	12,878 86
Depot in West st., and stores, (present value $200,000)	88,944 51
Dunkirk harbor improvements, including 50 acres of land, (present value $100,000)	10,560 90
Telegraph	44,696 12
Contingencies	78,700 21
New stock issued to old stockholders on reorganization of the company in 1845	894,500 00
Indebtedness of the old company assumed by the present company in 1845	467,116 13
Interest on stock and indebtedness of the Co	2,507,123 28
Expenses in negotiating first mortgage bonds	100,371 33
Interest on same to May, 1851	678,107 64
Discount on 7 per cent. certificates	34,857 60
Discount on 2d mortgage bonds	461,074 51
Discount on income bonds	257,539 47
Discount on convertible bonds of 1871	351,892 70
Discount on convertible bonds of 1862	381,565 60
Total	$27,551,205 71

We knew that the latter statement to be incorrect, when made, and it seems that the Company have since found out the error. We then stated the balance claimed was a *forced* one as the Company *now* admit.

The Balance sheet as now presented is as follows:

Balances of general ledger.—Sept. 30, 1853.		
Construction		$31,222,834 21
Cash on hand	$428,484 04	
Materials	795,462 23	
Real Estate	12,850 47	1,236,796 74
Stock of the Buffalo and State Line R. R. Co., at par	314,300 00	
Bonds of the Corning and Blossburg R. R. Co., at par	9,000 00	323,300 00
Advanced to Union R. R. Co., for improvements of road	143,427 77	
Advanced to owners of Lake Erie steamers	154,714 88	
Advanced to owners of Lake Erie propellers	61,463 04	359,605 64
Unadjusted accounts		83,306 57
Total		$33,225,843 16
Capital Stock issued		$10,000,091 08
Funded debt	$20,173,868 90	
Floating debt	2,685,026 49	22,853,895 39
Transportation		366,390 69
Interest due March 1, 1854, on Mortgage Bonds 1835		466 00
Total,		$33,225,843 16

We do not suppose it is worth the while to be very critical upon the present statements of the Company, but it strikes us that it is deficient in not showing what has become of the *net* earnings of the road to date. The dividends upon stock were paid from *capital*, till January 1, 1852. Up to Sept. 30, 1852, Mr. Loder, in his letter of 10th of March last, stated the *net* earnings to be 3,963,795 47. The Directors should have charged themselves, this sum, as well as money received from *capital*, and should have given the object, to which it was applied. There is no reason why the earnings of a road should not be accounted for as well, as receipts from other sources. It is *customary* for other companies to do so. We hardly know of an exception, except in the above case. We are still more surprized at the neglect of so obvious a duty; from the fact that the Directors do not appear to credit themselves with the large *deficit* in the revenue of 1852 which was found to exist, as we understand, on closing up the business of that year. Allowing the statement of the Company to be correct in its results, it is unbusiness like. If *incorrect*, it shows that the Company have not yet entirely got rid of some of their old habits.

The statistical portion of the report relating to its working economy, and physical charateristics of the road, is well stated. The *argumentative* part is in a strain of the highest eulogism, and some positions taken that are hardly tenable. The difficulties that surrounded the undertaking are graphically described, but no allusion is made to previous *mismanagement*, which have been greater obstacles to the progress of the work, than any of a *physical* or *financial* character.

We think the report would have been more complete, and much more useful, had an additional chapter been added upon the impropriety of parties, occupying influential positions in the management of the road, speculating on its stock and securities, and the tendency of such speculations to demoralize the general tone of service on the road, and to impair both the judgment and integrity of the interested parties.

We have no doubt strenuous efforts have been recently made, to correct abuses, and improve the general system of management. Important reforms are claimed to have been made. A direct reference to the chief sources of the abuses that have been committed, would have been more candid and manly, though perhaps it was hardly to be expected. It is something to know that to a certain extent they are understood and appreciated, even by the directors.

We are happy to notice that the Receipts of the Road are in advance of the estimates of the most sanguine.

Locomotives for Grades.

There is a large amount of ingenuity wasted every year in endeavours to adapt a system of efficient and economical motive power for indulating roads. We say *wasted*, as we believe that the ordinary engines are adapted to maxium grades, and by going farther, we may say that there is no system of motive power which *can be economically* applied to extreme grades.

All the plans which have been proposed for the operation of extreme grades provide for an increase of the *adhesion* of the engine. An increase simply of adhesion is not however, an increase of the power. The adhesion, already in excess, requires no increase except provision be made for extra steam power, either by an increase of pressure in the cylinders or a reduction in the size of the drivers. Now with the ordinary modes of generating and applying steam we cannot increase the power by an elevation of pressure, except by providing additional boiler capacity, which would involve of itself still greater adhesion; nor by reducing the diameter of the drivers can we secure the limit of traction desired, as these have already been made of the smallest diameters consistent with practical working, and this too, without disturbing the necessary relation between steam power and adhesive power.

The ordinary pressure of steam in the boilers of locomotives is from 70 to 130 lbs. per square inch, and we may perhaps take 100 lbs. as a fair average. This pressure cannot be preserved in the cylinder under the ordinary speed of freight engines, except by providing much more than the usual allowance of steam room in the boiler. To make this allowance, we must recollect, involves increased weight. The available working pressure in the cylinders if taken at 50 pounds, would never, in ordinary cases of working, produce a traction greater than the amount of adhesion necessarily due to the weight of the machinery for working that pressure. We will take for illustration an engine designed for working grades. Cylinders 19 inches diameter, 22 inches stroke, and drivers of 50 inches diameter; whole weight 30 tons, or 60,000 lbs. At a pressure of 50lbs. per inch the rotative power at the rims of the driving wheels amounts to 7,942lbs. The adhesion upon an ordinary rail would be 8,571lbs., allowing the friction of iron on iron at one seventh the pressure. We should say that this is considered a low estimate and that allowing an available friction of one sixth the pressure, or 10,000 lbs., would provide for a pressure of about 65lbs. per inch in the cylinders. And in the face of these facts we find engines of the above dimensions of cylinder and wheel, working upon 116 feet grades, with an adhesive weight of but 22½ tons, the surplus, or dead weight, in excess of the demands for adheison, being carried on a truck. It is evident from this that if the adhesion were increased one third, by the amount now carried on the truck, that there could be an opportunity for working at a much greater pressure than is now employed, provided the present capacity and *weight* of the parts are sufficient for its generation.

To show how certainly the corresponding adhesion is involved by a given steam power, we will consider what must be the weight of the machinery and materials to generate and apply a rotative power at the rims of the drivers of 8000 lbs. The boiler of such an engine would require to be of 48 inches in diameter, with tubes of 14 feet length, and would weigh, made of 5-16 inch iron, 3½ tons. The tube surface of about 1000 feet, would require a weight of 2 tons of tubes.—The frame for such an engine would weigh full 2 tons. Four pairs of connected drivers of 48 inches diameter would weigh, with the axles, 8 tons.—Two 19 by 22 inch cylinders, with chests, pistons and cylinder fastenings would weigh 2½ tons. The valve motion, connecting rods, slides and cross heads, springs, driving boxes, chimney, steam pipes, etc. would weigh 6 tons. The water in the boiler, equal to 100 cubic feet, would weigh 3 tons, the wood would average nearly ½ ton; and men, tools and extra fittings ½ ton more. Here we have 28 tons as the necessary weight of necessary parts of the machinery, the whole of which may be made available for adhesion by coupling the wheels.—This adhesion fully equal under ordinary circumstances to the given traction of 8000lbs. and with a good rail would be in excess. This amount of adhesion would be constant, while an engine of the assumed proportions would have the given traction only when working up to the full capacity of its boiler and cylinders.

The only question of the necessity for especial adaptation of locomotives to grades, is whether the ordinary engines can be worked at the maximum of safe pressure without deficiency of adhesion. With the present construction of boiler and mode of supplying steam to the cylinders, the relation of steam power to adhesive weight is established, and the latter is sufficient. *If* a boiler can be made capable of generating a higher pressure of steam with less weight of furnace, tubes and shell, and with less wood and water; if the frames, cylinders, wheels and axles, and the smaller parts can accomplish the same work with less weight of material, then the adhesion may become less than the *power* which it renders available.

The advocates of the especial adaptation of grade engines, claim that by increasing the adhesion beyond the limit of the surface-friction, lighter engines may be used. Now if *lighter* engines of ordinary construction are used, *less* steam will be generated and applied, the *traction* will be reduced below the limit of adhesion, and the engine will be yet incapable of operating heavy loads on heavy grades.

It is needless to describe or even to specify the plans which have been devised for increasing the adhesion. They have all been based upon an as-

sumption that "the power of an engine is measured by its adhesion", a conclusion which the ordinary working of locomotives proves to be incorrect. If this were true the *truck* would be laid aside and we could not speak of "dead weight", as every addition of weight, for whatever purpose, would produce additional power.

It will readily appear upon a little consideration that any engine which can exert upon a level the full power due to its capacity of cylinder and size of driving wheel will do as much upon any grade of practicable pitch. It is not that engines will not perform as well upon grades as elsewhere, but that grades themselves involve an expenditure of power in overcoming them, often to an extent beyond the ability of either the tractive or adhesive power of the engine used. For a rise of 16 to 20 feet in a mile the resistance to a train moving slowly is twice that upon a level; on a grade of 35 to 40 feet, three times as much; on a grade of 200 feet per mile the resistance would be fully *eleven* times that upon a level, and the steam power used for a given load must therefore be eleven times greater.

The expense of steam power must be largely dependant on the weight of steam used, as the evaporation of water is proportional to the amount of fuel consumed and to the destruction of the furnaces and tubes by heat. The power exerted involves also its corresponding wear of machinery and consequent expense for lubrication and repairs, so that it may be assumed that even could a lighter construction of locomotive be used with provision for extra adhesion, the expense of operating grades would still be very nearly in proportion to their increased resistance as compared with a level road.

In cases where the general transportation is sufficient always to furnish full trains, equal to the entire power of the locomotive, the equation of grades becomes a matter of much interest. An engine working up only half of its power may expend the additional power necessary to overcome a moderate rise, and without showing the extreme disadvantage of undulation in its full light. It is for those cases however where the transportation is heaviest that the economy of power is especially regarded. Z. C.

New Orleans, Jackson and Great Northern Railroad.

REPORT OF THE PRESIDENT AND CHIEF ENGINEER.

To the Directors of the N. Orleans, Jackson and Great Northern Railroad Company.—Gentlemen—The undersigned has the honor to lay before you a report from James H. Grant, Chief Engineer, which will inform you of the progress made in the surveys and location of the company's road, and the condition of its work, with an estimate of the cost of completing the same from the city to the State line. I also beg leave to submit the annexed statement, from the Secretary, of receipts and expenditures.

The estimates of the Chief Engineer exhibit $1,027,099 as the sum necessary to complete the road from the city to the State line, and to meet this expenditure, the means and resources of the company available within the period when needed, are deemed sufficient.

The resources of the company, over and above the cost of the road to the State line, amounting to about two millions of dollars, will be applicable to the grading and construction of the road from thence to the Tennessee river, and there is a reasonable expectation that the citizens of Mississippi on the line of the road, with proofs in favor of its ultimate completion, will have every motive to accelerate its progress by increasing their subscriptions; and I would respectfully recommend the early adoption of a plan best calculated to effect this purpose. With the means secured to grade the road from the State line to the Tennessee river, a distance of three hundred and twenty-two miles, there is no reason to distrust our ability to command, when required, on the faith of the works of the company, the means necessary to procure the iron and a complete equipment.

The undersigned, with Mr. Slidell, appointed as your Commissioners to negotiate the mortgage bonds of the Company, with a view of providing a sufficient fund, in addition to resources already secured, to complete, at an early period, the entire road from New Orleans to the Tennessee River, proceeded to London in July last. On our arrival in that city, we ascertained that owing to the advancing rates of interest, caused by the apprehension of a serious deficiency in the harvests, and the probability of political troubles, calculated to disturb confidence among capitalists, it was quite impracticable to effect the sale of new loans. Finding this unfavorable state of affairs, we deemed it advisable to defer placing the bonds on the market for sale, and what has since transpired, in respect to the general depreciation in the value of public stocks and railroad securities, will, I hope, be deemed a sufficient and satisfactory reason for the postponement of negotiations, which we are not without encouragement to renew on the appearance of a favorable change in monetary affairs. If the company had been prepared to sell its bonds a few months earlier, I am entirely satisfied that the basis of their security and the promises of the scheme, would have ensured success. Now that its works are more advanced, and in a few months the section between the city and the State line will be finished and in operation, with over two millions of dollars of expenditure, there is still more reason to regard success as neither equivocal nor doubtful, on the revival of confidence and a demand for stocks of acknowledged security.

If we look to the history of improvements commenced in other States of the Union, the progress we have already made will compare favorably with any similar enterprise. We have before us a certainty of being able to complete nearly ninety miles of road on or before the ensuing July, besides having overcome in its construction, difficulties, by many deemed insurmountable, but now ascertained by the Chief Engineer to be of no serious importance.

While daily experience is demonstrating that natural channels of commerce are inefficient in competition with those of an artificial character, and is suggestive of the necessity of counteracting the powerful efforts made to impair our commercial superiority, we have derived from the late afflicting epidemic fresh motives to animate our zeal, and to persevere in the prosecution of the works of the company. Aside from the immense commercial importance they possess, the convenience and facility they will afford to our citizens and those of the interior States cannot be overestimated in value, when, with the connections of our road with others completed and in progress under the fostering aid of the States of Tennessee and Virginia, Washington City may be reached in two days, at a speed of twenty-five miles per hour.

In the present condition of the company, the progress made in its works, and the remaining resources for their extension, we have everything to hope and no cause for discouragement.

Very respectfully, your obedient servant,
JAMES ROBB, President.

N. Orleans, Jackson and Great Northern Railroad,
Engineer Department, N. Orleans, No. 24, 1853.

JAMES ROBB, Esq., President:

Sir—In compliance with your request, communicating the wishes of the Board of Directors, that I should submit to them an accurate statement of the condition and progress of the works of the company under my charge, I respectfully report as follows:

SURVEYS, LOCATION AND CONTRACTS.

The entire line of road from New Orleans to Nashville, a distance of 550 miles, has been carefully surveyed, and a final location made of 409 miles, between New Orleans and Chickasaw, on the Tennessee River, intersecting the Memphis and Charleston road in Bear Creek Valley, 400 miles from New Orleans; 256¼ miles have been placed under contract, viz: 87⅓ miles from New Orleans to the State line, 95⅔ miles from the State line to Jackson, 23¼ mile from Jackson to Canton, and 50 miles from Aberdeen, south. The entire line of road is free from any engineering difficulty, and the route will compare favorably with any in the Union; not only with reference to the gradients, alligments, facility and cheapness of construction, but in the elements of travel and traffic necessary to insure a certain and profitable return on its cost.

PROGRESS OF THE WORK.

The graduation, cribbing and and piling of near seventy miles, have been constructed between this city and the State line, sixty-two of which are ready for the reception of the cross-ties and iron rails. The track laying has been commenced at the main depot, also between the North Pass and the "Piny Woods," and from the latter point it is progressing towards the State line. The bridges at the North, and South Pass, Manchac, are in a state of forwardness, and will be speedily completed in a substantial manner. In regard to this portion of the work of the company, I am entirely satisfied that the plans adopted for crossing the Passes are attended with no practical difficulty whatever, and that the structures will be permanent and safe for the passage of your trains. The same remarks apply equally to the cribwork in progress of construction across the Swamp Prairie, and the whole series of swamp between the city and the "Piny Woods," will be passed without encounteriug any material engineering difficulty.

COMPLETION OF THE ROAD TO THE STATE LINE.

The agreement as to the time for the completion of the contract of Messrs. Thos. C. Bates & Co., from the South Pass Manchac to the State line, a distance of forty-one miles, will enable them to deliver it in a finished condition on or before the 1st of July next, and the state of forwardness of the work between the city and the South Pass is such as to insure its completion within the same period of time. This being done, there are no obstructions in the way of having the entire road, from the city to the State line, in operation, with a daily train of cars running on and after the 1st of July next.

COST OF FINISHING TO STATE LINE.

The following is an estimate of the expenditure necessary to cover the cost of completing the road to the State line:

Thos. C. Bates & Co., balance of their contract	$295,612
Contractors from depot to South Pass.	178,500
Expenses of laying track	55,500
Iron rails, chairs and spikes for 87⅓ miles less amount received and on hand	471,987
Engineering and superintendence	25,000
Total	$1,027,099

Plans for the main depot buildings have not been prepared, and it is not deemed advisable to commence their erection until the road is completed to the State line. The temporary building constructed on the company's grouns will answer all purposes for the present. Any further expenditures at this time for that purpose would be premature and uncalled for. The company have received 3,700 tons of iron rails, and have advices of the further shipment of 3,300 tons expected to arrive in December and January, making in all 7000 tons, which will iron the road for the distance of 65½ miles. The remaining 3000 tons due on the contract for 10,000 tons made by Messrs. R. Wil-

son, Hallett & Co., of Liverpool, are deliverable in February next. Three locomotive engines have been purchased; also a sufficient number of burden cars to transport the necessary materials for laying the track.

OPERATIONS IN MISSISSIPPI.

In Mississippi, between the State line and Jackson, a portion of clearing for the roadway is opened, and on the division between Jackson and Canton, embracing a distance of 23½ mile, about one-half of the graduation is finished. From Aberdeen south, the work has been commenced, and for the present will be prosecuted to the extent of collections made from the subscribers in Monroe county.

The foregoing is respectfully submitted as a general outline of the operations of the company up to this time, deferring to the period of the annual meeting of the stockholders the detailed report made up from plans, maps, profiles and notes belonging to surveys and location, exhibiting the progress of the work, rolling stock on hand, description of location, grades and curves, and a careful estimate of the entire line to Chickasaw, on the Tennessee river, including a complete equipment of engines and cars.

Very respectfully, your ob't. servant,
JAMES H. GRANT,
Chief Engineer.

The statement of receipts and expenditures of the company up to the present time is as follows:

RECEIPTS.

Received by Assessments on Capital Stock	$685,919 62
Received on account of State Subscription	165,000 00
Sale of Real Estate Tax Bonds	905,000 00
Miscellaneous	29,063 22
	$1,289,982 84

EXPENDITURES.

Construction	$645,245 32
Rails	270,963 72
Engines	24,949 21
Surveys	104,090 87
Real Estate	58,957 48
Cash on hand	88,320 02
Miscellaneous	92,852 22
Total	$1,282,992 84

Statement of the Mobile and Ohio Railroad Company.

The Mobile and Ohio Railroad Company being about to make an issue of first mortgage bonds for the purpose of purchasing superstructure and equipment, and placing the same on their Road, deem it a proper occasion to submit a brief statement of the condition of their affairs, and their plans for the future.

The line of the Mobile and Ohio Railroad extends from Mobile, on Mobile Bay, to the mouth of the Ohio River, opposite *Cairo*, the Southern terminus of the Illinois Central Railroad, extending from that point, north to Chicago, on Lake Michigan.

The length of line proposed to be built is as follows:

Main trunk from Mobile to Cairo,	494 miles.
Branches,	40 "
Turnouts and sidings,	60 "
Total,	594 miles.

The cost of preparing the road bed for the rails, embracing graduation, bridging, masonry, etc., etc., as estimated by the Company's Engineer, John Childe, Esq., is $5,101,576

The route is exceedingly favourable for the cheap construction of a Railroad, involving little work of an expensive character. No streams of any magnitude are crossed on the whole line. No Road in the United States of equal length can be constructed, probably, at less cost.

For the purpose of preparing the road bed for the superstructure and equipment, local stock subscriptions have been obtained to the amount of $5,107,576, which it is believed, are solvent and payable beyond contingency, and will be paid in as fast as wanted for construction.

Of the whole Road, 33 miles, commencing at Mobile, are already completed, and in successful operation. The balance of the line is under contract to be ready for the rails on the first day of January, A. D. 1855. The work is being rapidly urged forward, and is already so far advanced, as to impose, it is believed, no impediment to the laying of iron as fast as it can be delivered upon the line. One hundred miles are already prepared for the rails.

The Company have purchased, and have on hand, a sufficient quantity of rails, with the other necessary items, for 150 miles of track. The laying of the rails will be commenced immediately, and will be urged on with all practicable despatch.

The cash expenditures on account of construction, up to the present time, amount to $1,500,000. This sum does not embrace the 20 per cent reserved in all cases, as security for the faithful performance of contracts.

The total cost of the Road, as estimated by the Company's Engineer, is as follows, viz:

3,600 tons of iron already laid,	$151,200
7,100 " " " in Mobile, (cost)	369,200
60,000 " " " to arrive, (estimated cost)	3,979,600
Chairs, spikes, laying track, freights, etc., etc.,	700,000
Equipment,	1,700,000
Graduation, masonry, etc., as above,	5,101,576
Total estimated cost of Road,	$12,001,576

The above estimate has been prepared with great care, and will not, it is believed, be exceeded.

The means provided are as follows:

Stock subscription, sufficient to grade and bridge the road,	5,107,576
State of Tennessee bonds equal to $8,000 per mile of line in that State,	940,000
Proceeds of mortgage bonds,	6,000,000
Total,	$12,047,576

The security for the bonds now issued will be as follows:

Cost of graduation etc.,	5,101,576
Cost of superstructure and equipment,	6,900,000
Lands for depots, stations, etc., including 49 acres at Mobile, in addition to Lands donated by Congress,	500,000
One million one hundred and fifty-six acres of land granted by Congress in aid of a Railroad from Mobile to Chicago, on and along the line of the Road estimated at the low price of $5 per acre,	6,000,000
Total value of security,	$18,501,576

Or, *three* times greater than the amount sought to be borrowed.

The value of the lands owned by the Company are believed to be estimated at a much less value than their real worth. Experience has shown that the construction of a Railroad adds immediately more than $5 per acre to the value of all land lying within ten miles of its line.

It is well known that the Illinois Central Company are constructing their Road, almost entirely, with the proceeds of bonds based upon the lands granted by Congress to that, in connection with the Mobile and Ohio Roads. There can be no doubt that the cash value of these lands is much greater than the entire debt of the Company. The lands that are made the basis of the construction bonds of the Illinois Company, are valued at over *ten* dollars per acre, or *twice* the estimated value of the land belonging to the Mobile and Ohio Company. The latter prepare their road for the superstructure *entirely* by means of *local* subscriptions, which are considered in similar cases, as ample security for the loan of moneys required for iron and equitpment.

For the purpose of making the security available to the bondholders, the franchise, road bed, equipment, rolling stock of the Company, and the lands received from the general Government, have been conveyed in trust to Morris Ketchum and John J. Palmer of New York, and Wm. R. Hallet of Mobile, all gentlemen of the highest respectability, and of well known credit in financial circles, with full authority to sell said lands, and in case of default by the Company, to take possession of, manage, make sale, or otherwise dispose of all the Company's property and franchises for and on account of the creditors of the Company. To said mortgage, which is annexed, reference is had for a more full statement of the Company's charter, privileges, route of road, objects, etc., etc.

In addition to the security described, the Company have full confidence that both the interest and principal of the above bonds will be amply provided for by the *earnings* of their Road. They believe it occupies a route possessing business resources unsurpassed by any other Road in the United States. It traverses a section of country distinguished for its fertility, for the extent and value of its productions, filled with a numerous, active and wealthy population, which must use the above Road as the most convenient outlet to a market. The liberal local subscriptions obtained are at once evidence of the great interest felt in the work, on the part of the inhabitants on its line, and of the ability to supply a liberal traffic to the road. The road runs in the *natural* direction of trade, and must command the business of a larger belt of country than any other road of equal length in the United States. One of the leading items of freight will be *Cotton*, which, from its great value, will bear a high charge for transportation, which is one of the reasons that render Southern roads among the most profitable works in this country.

Pursuing a route nearly equi-distant from the navigable waters of the Mississippi on the one hand, and the Tombigbee on the other, the road will not suffer from the competition of navigable rivers, while its directness will equally protect it from competition of rival works. From a carefully prepared estimate of the Company's Engineer, it is believed that the *net* receipts from the road the first year after its opening cannot be less than $1,500,000. Deducting from this sum $400,000 for interest and expenses on account of funded debt, there will be left $1,100,000 for dividends, or about 20 per cent per annum. The Company now offer their securities to the public, fully convinced of their soundness, and believing that none of a higher character have ever been issued by any Railroad Company in this country under similar circumstances.

SIDNEY SMITH,
President.

Mobile, Nov. 25th, 1853.

Performance of a Locomotive.

During some trials of engines, made upon the Baltimore and Ohio road, in the month of November, 1852, several trains of upwards of 250 tons gross weight were drawn up the 82 feet grades between Baltimore and Martinsburg. This performance, of a single engine, we are not led to suppose an *extreme* one, but it affords a very interesting illustration of the resistances of such grades, and of the traction and *adhesion* of the engines.

On the 10th of November, engine No. 72, built by the Baltimore and Ohio Road Company, took, besides its own weight, that of its tender and of 18 cars, weighing with freight 259.22 tons, up the 82 feet grade. The dimensions of the engine were as follows: 20 inch cylinder; 22 inch stroke; eight connected drivers of 43 inches diameter and having *chilled tires*. Tube surface about 1200 square feet and grate surface 18 square feet. Whole weight about 28¾ tons of 2000 lbs., all of which is on drivers.

Our object, with the *facts and data* of this performance before us, is to show the extent of tractive power exerted, and the amount of adhesion which the chilled tires must necessarily have possessed in order to make this steam power available.

In estimating the resistances of the train and engine we will take the data established by Pambour which are demonstrably correct, and are always adopted by engineers in the estimation of resistance. It is, perhaps, however fair that his allowances for tons of 2240 lbs. should be adopted for tons of 2000 lbs.

1. Friction of engine gear alone, without load, 6 lbs. per ton weight of engine.

2. Friction of wheels, axles, &c., of engine and tender, 9 lbs. per ton.

3. Friction of train by itself 8 lbs. per ton.

4. Friction of engine gear is 1 lb. additional for every additional ton of train.

Let W = tons weight of engine.
" w = tons weight of tender.
" L = tons of wagons and load.
" L' = tons of engine, tender and train.

The force necessary to balance the resistances alone being

$$6W + 9(W + w) + 9L = 6W + 9L'.$$

Let now the slope of any grade as 5280 ÷ 82 (= '01553) be called $\frac{1}{s}$, then the increased force of traction on grades will be $\frac{2000L'}{s}$ and thi brings an increased strain on the engine gear of $\frac{2000L'}{8s}$, the additional friction of engine gear being one eighth that of train.

To obtain the practical results of the above equation add 6 pounds per ton weight of engine to 9 lbs. per ton weight of both engine and tender: or 172½ lbs. to 405 lbs., equal to 577½ lbs. This, added to 9 lbs. per ton of load, 2,198 lbs., amounts to 2,775½ lbs. The whole gravity of the engine and train, being 82 ÷ 5280ths part of their entire weight, is found to be 8,945 lbs., which being increased one eighth, as the extra friction of engine gear, becomes 10,063 lbs. This added to the first amount of 2,775½ lbs. amounts to 12,838½ lbs., which, at least, must have been the total resistance of the engine and train on the 82 feet grade. This would be equal, with an engine of the dimensions of the No. 72, to an effective pressure of 62¾ lbs. per square inch of the pistons: $(12{,}838\frac{1}{2} \div \overline{20 \times 20 \times 22} \div 43 = 62\frac{3}{4}$ nearly). This tractive power being exerted, the *adhesion* of the chilled tires must have been in equilibrium with it to render it available, whereby the adhesion of an engine of 57,400 lbs. weight is known to be 12,838½ lbs., or nearly *one fourth*, and this, too, with *chilled tires*.

Engine No. 72 has however performed a greater feat than the above, that of taking 18 cars, weighing, with freight, 225 tons, up the 116 feet grades west of Cumberland. By applying the foregoing equation to this performance we find the resistance overcome to be 15,722 lbs., or equal to an effective pressure of very nearly 77 lbs. per square inch on the pistons, and as this load could not have been moved but for a corresponding traction and adhesion, we must admit the adhesion of the chilled tires in this case to have been 15,722 ÷ 57,400 = .274, or nearly *three tenths* of the pressure.

The resistances of trains either upon levels or inclines are capable of exact estimation. The resistance of gravity, especially, which is the most important one on a grade of 116 feet per mile, is inevitably the same fraction of the load as is the *rise* of the *length* of grade. The resistance of gravity alone of the above load, with engine and tender, on a grade of 116 feet per mile, is necessarily 11,695 lbs., which of itself, without any allowance for any friction of the train, would require an adhesion to overcome it of more than one-fifth the weight of the engine.

The following statement exhibits in a consecutive manner the data and results of this trial. It is arranged from information received on application to Mr. S. J. Hayes, the Master of Machinery of the Baltimore and Ohio railroad.

Number of Engine on company's list...	72
Weight of Engine in running order.....	57,400 lbs
Diameter of Cylinder.....	20 in.
Length of stroke.....	22 "
Diameter of Drivers.....	43 "

All the weight on eight coupled drivers having cast iron chilled tires.

Number of eight wheel cars in train....	18
Weight of cars and load thereon.....	225 tons.
Length of grade on which trial was made.....	4 miles.
Height of grade, equal to 116 feet per mile.....	464 feet.
Speed of train on grade per hour.....	7 miles.
Pressure of steam, (blowing off strongly,).....	90 lbs.

No assistant engine was used in any part of the trial; the engine No. 72 being stopped and started, with its train, upon the grade, by its own unaided power. The drivers, Mr. Hayes says, did not slip, and sand was used in two or three instances only when the sun did not shine.

The train hauled up the 82 feet grade was moved at the rate of 7½ miles per hour, the pressure of steam in the boiler being from 100 to 125 pounds. The length of this grade is 2½ miles. At a subsequent trial a train of two cars less, or 16 cars, and weighing 21 3-100 less, was taken up at a speed of 12½ miles an hour. A train of 17 cars was also taken up at 10 miles an hour.

To any one conversant with the operation of the locomotive, it will be plain that, with the data given, the power exerted must have been at least what we have stated; and the fact of its having been made wholly available through the sufficiency of adhesion, presents us with an enlarged estimate of the latter element of power. The fact that any engine with the extreme capacity of cylinders and smallest diameter of wheels ever used for locomotives; working besides at the high effective pressure of 77 lbs. per square inch of the piston, and having but little dead weight, being probably lighter, for the steam power exerted, than any other engines in America,—all before us; and combined with evidence of the fact that the adhesion was *at least equal* to this entire force, derived from the steam pressure, affords an extremely interesting illustration of the extent and mutual relation of the elements of locomotive power.

The fact that this adhesion was derived from the *chilled cast iron surface* is but another evidence of the entire reliability of the chilled tire, and sets at rest all doubts of its capacity in the respect of its adhesion.

We do not believe that the transportation upon any other railroad, of any gauge, in this country, shows so large a duty done by the expenditure of a given power, or by a given capacity of locomotives, as that of the Baltimore and Ohio.

ZERAH COLBURN.

Buffalo and Pittsburg Railroad.

We learn from the Buffalo *Commercial Advertiser* that Messrs, MOORE & PIERSONS, the contractors for the whole line of the Buffalo and Pittsburg railroad, went out on the line of the road yesterday, with a strong force of hands, carts, horses, tools, &c., for the purpose of commencing work forthwith and prosecuting the same with vigor. They are about to put in operation steam excavators at two points on the road, where heavy excavations have to be made. Messrs. Moore & Piersons have just completed their large contracts on the Great Western Railroad, in Canada, and the energy with which they prosecuted that work gives good assurance that the undertaking upon which they have now entered will not suffer any delay under their hands.

This road is looked upon by the citizens of Buffalo, and by the people along the line of the route, as the best project which has ever been placed before that community. It is the key by which the coal and iron mines of Pennsylvania are to be opened to Western New York; and as every inhabitant of the surrounding country must consume more or less of coal and the manufactures of iron, it becomes evident that, an indirect support, at least, must be rendered to this road, from the commencement of its operations, by every family in that section of country. When this road and the Alleghany Valley railroad, with their connections, are completed, the cars can run directly from the mines to the coal yards and foundries along the route, delivering their productions at the point of manufacture and consumption without transhipment.

As the city of Buffalo is the great point of shipment and debarkation of the commerce of the Great Lakes, containing at present 65,000 inhabitants, with a probability of an increase to 100,000 by the time these roads are completed, it will be seen that this route *must* have a business, from the transportation of coal and iron alone, equal to the payment of a handsome dividend on its entire cost. But, besides this, there is every probability that it will be called upon to supply the southern peninsula of Canada also with coal through the connection which it will form with the Buffalo, Brantford and Goderich and Great Western roads.

The Sault St. Marie Canal will be completed about the same time, opening the iron regions of Lake Superior to the freedom of the lake navigation, by which the iron workers of Buffalo will be in receipt of the rich ores of that section.

These latter ores, when mixed with those of Pennsylvania, it is said, make the most serviceable iron which has ever been produced. It will be seen therefore that with these facilities Buffalo may increase her manufactures with a rapidity commensurate with her magnificent and lucrative commerce; and with the whole Lake country of the West for a market for her machinery, and other manufactures of iron, it is impossible to predict the extent of her growth and importance; but, if she will put forth the efforts necessary to increase her manufactures and commerce in the same ratio with the increase of the wester

country generally and the commercial marts of that country in particular, there is no reason why she may not maintain her present position of commercial metropolis of the Lakes.

In view of these facts the citizens of Buffalo should yield to the Buffalo and Pittsburg Company a hearty and unqualified support in its efforts to push forward their work to an early completion. As an investment we look upon it as one of the most promising roads in the country, and to none will it yield so large a dividend as those interested in the advancement of Buffalo.

Finances of Virginia.

The annual report of the Second Auditor of the Board of Public Works of Virginia, for the fiscal year ending 30th of September, 1853, states that the receipts of the Treasury, on account of the Internal Improvement Fund, amounted to $5,087,428 27; and, with the balance on hand at the commencement of the last fiscal year, made an aggregate of $5,102,478 23. There was disbursed, during the same period, $5,010,632 59, leaving a balance in the Treasury, on the 1st October, 1853, of $91,845 64.

The sum of $425,947 06 was received on account of dividends, bonus, and interest on the productive investments of the fund, and premiums on loans obtained. This amount is $8,341 51 more than was received from the same sources during the year ending 30th September, 1852.

There was received, on account of registered and coupon bonds, the sum of $4,050,486 87. The increase of the outstanding public debt during the fiscal year amounts to $4,026,786 87.

The aggregate outstanding public debt of the Commonwealth on the 1st October last, after deducting the amount redeemed, as per exhibit of the Sinking Fund, is ascertained to be $18,041,775 50.

It is deemed proper here to state that the equated value of the produtive investments held by the Internal Improvement Fund, and the Commonwealth proper, to obtain which the debt of the Commonwealth was incurred, is estimated at $8,121,500. By *equated value* is meant that amount which, at 6 per cent., yields the revenue of these stocks. Therefore, the outstanding debt of Virginia, on the 1st October, 1853, less the above value of investments, is $9,920,275 50.

The disbursements on account of loans to internal improvement companies, to be redeemed in thirty-four years, amounted to $1,700,000. The sum of $2,149,552 56 was paid on account of subscriptions and appropriations for purposes of internal improvement.

The Internal Improvement Fund possesses productive investments amounting to $5,636,226 30, which is an increase of $1,993,212 56 over the amount held at the end of the fiscal year for 1852. In arriving at this result, I have deducted from the amount stated in the report of that year the sum of $100,000 loaned to the Rappahannock Company, which, though secured by bond and mortgage, was not then, nor is it now, productive.

The establishment of the Sinking Fund should and must necessarily place the credit of the Commonwealth upon the highest ground. Of the public debt existing on the 1st day of January, 1852, there was authorized to be redeemed certain certificates amounting to $127,900. Of this amount there has been redeemed $114,566 67, and the residue the holders thereof have not presented for redemption. The interest upon the amount thus authorized to be redeemed stopped on the 1st of August last- the time advertised for its redemption.

The balance in the treasury to the credit of the Sinking Fund on the 1st day of October, 1853, is $18,764 83.

Machinists' Tools.

A SUPERIOR CLASS,

DESIGNED particularly for Railroad work, manufactured by L. B. TING & CO., (late ALDRICH, TING & Co.,)

October 7, 1853. LOWELL, Mass.

P. J. Tournadre,

Chief Engineer Vicksburg, Shreveport and Texas R.R., Vicksburg, Miss.

To Locomotive Engine Builders and Engineers.

THE Proprietors offer for rent for a term of years, with immediate possession, the splendid property, known as the BELLEVILLE IRON WORKS, situated on the Mississippi, directly opposite the City of New Orleans, and within 300 feet of the River, with which it is connected by fine wharves and landings.

The buildings are of brick, with slated roofs, and were erected in 1848 at a very heavy expense; are of a most substantial and durable character and admirably fitted for a Foundry and Machine Shops, or almost any mechanical business. They now contain a new and powerful Engine and Boiler and sufficient machinery, say, planing machines—lathes—boring machines, blacksmith's tools, &c., &c., to employ 100 mechanics, and could be put in working order in a few days. The Buildings cover a lot 300 feet square and are amply large to receive the necessary machinery for the use of 800 to 1000 workmen.

The terminus and depot of the New Orleans, Opelousas and Great Western Railroad is situated about 300 yards from the above property, which could be availed of to great advantage for the manufacture of Locomotives and Railroad work, generally as well as Steam Engines, Sugar Mills, and other descriptions of Machinery.

There are no Shops in New Orleans for the manufacture of Railroad Machinery, and as the Railroad Companies now organized in that city contemplate the construction of over 1000 miles of road,—a large part of which is already under contract,—the property now offered for lease offers a most eligible opportunity for parties desiring to contract to furnish the Engines and Machinery,—for those roads. Responsible contractors with their works on the spot would have an advantage over Northern Workshops in contracting for the Work of the Railroads terminating in New Orleans.

The Establishment and prospect of remunerating work to be secured immediately are worthy the attention of manufacturers and Engineers generally.

Applications from responsible parties will be promptly attended to, and to satisfactory parties the proprietors of the Works can offer favorable terms and arrangements.

Letters may be addressed to

R. B. SUMNER,
No. 61 Camp Street,
New Orleans;

and further information may be had by applying to Messrs. BARSTOW & POPE, Pine Street, New York.

Railroad Iron Via Quebec.

JOHN ANDERSON & Co.,

COMMISSION MERCHANTS,

SHIPPING AGENTS AND BROKERS,

QUEBEC,

PARTICULAR attention given to the Transhipment of Iron in Transitu for the Western Lake Ports, likewise to the Shipment of Rails in Gres. Britain.

Quebec. Dec. 2, 1853.

Railroad Iron.

TWO THOUSAND TONS Erie Pattern, 58 lbs. to the yard, already shipped, and expected here soon—for sale by

38tf JOHN H. HICKS, 90 Beaver st.

1300 Tons Yorkshire T rail, weighing 56 lbs. to the yard, and of a superior quality daily due and for sale by,

NAYLOR & CO.

Oxford Furnace, N. J.

ESTABLISHED A. D. 1743.

THE Subscriber manufactures and keeps constantly on hand for sale, every variety and size of Railroad Wheels made from the celebrated Oxford Iron. All orders addressed to CHAS. SCRANTON, Oxford Furnace P. O., will be attended to promptly.

Sept. 11, 1852. 1y*

Valuable Works on Railroads, Railway Engineering, Steam Engines, &c.

LARDNER'S RAILWAY ECONOMY, 1 vol.	$2 00
THE STEAM ENGINE, STEAM NAVIGATION, ROADS AND RAILWAYS, Explained and Illustrated by Dr. LARDNER, 8th Edition, revised and improved	2 00
TREDGOLD ON THE STEAM ENGINE, 3 vols., 4 to., ½ calf	50 00
TREDGOLD'S PRACTICAL TREATISE ON RAILROADS AND CARRIAGES	1 50
PORTWINE ON THE STEAM ENGINE	50
BURGOYNE'S ART OF BLASTING ROCKS, QUARRYING, &C	31
TREATISE ON TUBULAR AND GIRDER BRIDGES	31
BAKER'S LAND AND ENGINEERING SURVEYING	62
BAKER'S RAILWAY ENGINEERING AND EARTHWORK	1 50
PRIDEAUX ON ECONOMY OF FUEL	81
SEWELL ON STEAM AND LOCOMOTION Vol. 1	31
HERBERTS ENGINEERS AND MECHANICS ENCYCLOPEDIA, 2 Vols	9 50
GARRS RAILWAY LOCOMOTION AND STEAM NAVIGATION	1 75
TRAUTWINE ON EXCAVATIONS AND EMBANKMENTS	1 00

Imported and for sale by JOHN WILEY,
167 Broadway, New York.

N. York and N. Haven R. R.

NOTICE OF SUMMER ARRANGEMENTS,

Commencing Monday, May 9, 1853.

TRAINS FROM NEW YORK.	TRAINS TO NEW YORK.
7 A. M.—Accommodation to New Haven.	5.30 A.M.—Special, from Port Chester.
8 A. M.—Express for Boston, stopping at Stamford and Bridgeport.	5.00 A.M.—Commutation from New Haven.
	6.15 A.M.—Accommodation fm New Haven.
9.10 A.M.—Special for Port Chester.	8.15 A.M.—Accommodation fm New Haven.
11.30 A.M.—Accommodation for New Haven.	9.35 A.M.—Express from New Haven, Stopping at Bridgeport, Norwalk and Stamford.
3.00 P.M.—Express for New Haven, stopping at Stamford, Norwalk and Bridgeport.	1.07 P.M.—Boston Express, stopping at Bridgeport, Norwalk and Stamford.
4.00 P.M.—Accommodation for New Haven.	
5.00 P.M.—Express for Boston, stopping at N. Haven.	4.00 P.M.—Special, from Port Chester.
5.35 P.M.—Commutation for N. Haven.	4.00 P.M.—Accommodation fm New Haven.
6.30 P.M.—Special for Port Chester.	9.30 P.M.—Boston Express, stopping at Bridgeport, Norwalk and Stamford.

GEORGE W. WHISTLER, Jr., Sup't.

New Haven, May, 1853.

Stuart, Serrell & Co.,

CIVIL ENGINEERS,

Rooms 22, 24, 26 & 27,
157 Broadway, New York.

CHARLES B. STUART, DANIEL MARSH, EDWARD W. SERRELL, SAMUEL McELROY.

New Works on Civil Engineering.

THE Field Practice of laying out Circular Curves for Railroads.—By JOHN C. TRAUTWINE, Civil Engineer—2nd edition in pocket-book form.

A new and rapid method of Calculating the Cubic Contents of Excavations and Embankments, by the aid of Diagrams.—By John C. Trautwine, Civil Engineer—with 10 Copper Plates.

Price One Dollar each—postage on the Curves Three Cents—and on the Excavations and Embankments, Six Cents.

For sale by WILLIAM HAMILTON,
Hall of the Franklin Institute,
May 4, 1853. Philadelphia.

ESTABLISHED 1796.

McAllister & Brother,

OPTICIANS and Dealers in Mathematical Instruments, at the old established stand, 48 Chestnut street, Philadelphia, Pa. Mathematical Instruments separate and in cases, Protractors, Spacing Dividers, Drawing Pens, Ivory Scales, Tape Measures, Salometers, Spy Glasses, Microscopes, Spectacles, Hydrometers, Platina Points, Magic Lanterns, etc, etc., etc.

Our Illustrated and priced Catalogue is furnished on application and sent by mail free of charge.

Nov. 19, 185

$1,000,000 LITTLE MIAMI RAILROAD COMPANY SIX PER CENT. FIRST MORTGAGE BONDS FOR SALE.

OFFICE OF WINSLOW, LANIER & Co.
No. 52 Wall-st., Oct. 6, 1853.

THE LITTLE MIAMI RAILROAD COMPANY offer for sale one million of their SIX PER CENT. BONDS, with coupons. Interest and principal payable in New York, the former half-yearly, 1st of November and 1st of May. They are in sums of $1,000 each, payable the 1st day of May, 1858.

These Bonds are issued under the express authority of the Legislature of the State of Ohio; and are a part of the $1,500,000 Loan authorized to be issued by a vote of the stockholders, for the purpose of raising means to make a double track; the greatly increased and increasing business of the road makes this absolutely necessary.

The Little Miami Railroad is eighty-four miles long, commencing at the City of Cincinnati and terminating at Springfield; is now in complete running order; has cost, including equipments, stations, station-houses, &c., up to this date $2,708,109 19.

This Company hold stock in the Columbus and Xenia Railroad Company to the amount of $386,000, which now commands a premium of 20 per cent. Also, in the Hillsborough Road the amount of $11,716.

The receipts of the Road have been as follows:

For the year ending Dec. 1, 1844.....	$18,623 36
For the year ending Dec. 1, 1845.....	46,327 58
For the year ending Dec. 1, 1846.....	116,052 02
For the year ending Dec. 1, 1847.....	221,139 52
For the year ending Dec. 1, 1848.....	280,085 78
For the year ending Dec. 1, 1849.....	321,398 82
For the year ending Dec. 1, 1850.....	405,597 24
For the year ending Dec. 1, 1851.....	487;845 89
For the year ending Dec. 1, 1852.....	526,746 35
The receipts from Dec. 1, 1852, to Sept. 1, 1853, 10 months were.....	544,625 59
For the same period year before.....	411,797 06
Increase in 10 months.....	$132,823 53

The position of this road, being the natural, shortest and most usually travelled route from Cincinnati and the vast country south and west of it, to the northern cities, must ever make it one of the most important and profitable lines in the country.

An inspection of a map will show its connections to be many and important. This road operates the Columbus and Xenia Road, and runs in connection with the Cleveland and Columbus Road; in fact they are now run as one line greatly to the advantage of all.

Regular annual 10 per cent. dividends have been declared since December, 1847, with an extra dividend of 5 per cent. in 1852. In 1852 two cash dividends of 5 per cent. were made.

The present surplus and reserve fund amounts to.....	$98,546 10
The mortgage covers the entire line of road, costing to date...	2,708,108 19
To be expended on double track, &c.	1,500,000 00
Value of security.....	$4,208,109 19

The security for the payment of these Bonds is one of the most ample character, being a first and only mortgage or deed of trust (excepting one of $100,000 to the City of Cincinnati) on the Company's Road, Stations, Franchises, net income, &c., to J. F. D. LANIER, Esq., of this city, in trust for the bondholders, with ample power to take possession of the Road, its real and personal estate, franchises, &c., and to sell the same to the highest bidder for cash, if default be made in payment of interest or principal. The mortgage is for $1,500,000, and cannot be increased.

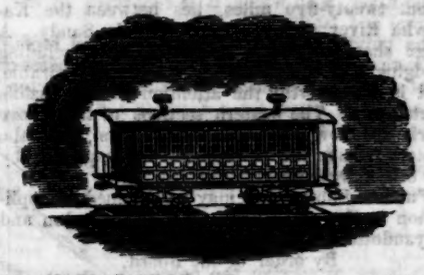
The Stock owned by the Road in the Columbus and Xenia and Hillsborough Railways will much more than pay off the $100,000 prior lien to the City of Cincinnati, and all other debts of the Company, excepting this loan of $1,500,000.

These Bonds are offered at private sale by the undersigned, Agents of the Company.

Printed statements of the affairs of the Company, and any further information relative to the securities, will be given by

WINSLOW, LANIER & CO.,
No. 52 Wall-st.

Elmira Car Manufactory.



THE Undersigned is prepared to manufacture for Railroad Companies, Passenger, Baggage, Cattle, Freight, Gravel and Hand Cars, also Baggage Barrows and Freight Trucks.

WM. R. RUTTER.

Elmira, N. Y., June 1, 1853.

The Hamilton Car Company,

ARE prepared to Contract for the Manufacture to order Rail Road Cars of every description, such as Passenger, Baggage, Freight, Dumping and Hand Cars, &c. &c.

Having ample facilities for Manufacturing at the lowest rates, and being supplied with Eastern Mechanics in every department under the Superintendance of H. P. Lanckton, who has had charge of T. W. Wason's well known establishment at Springfield Mass., for the last Six years, we can guaranty ours to be equal in style and quality to any manufactured.

Car Manufacturers and Rail Road Companies Supplied with Car wheels from the most approved patterns at the lowest prices. Castings of all kinds for Cars, Rail Road Bridges, &c. made to order at short notice.

Orders Respectfully Solicited.
Address, HENRY SIZER, *Agent*,
Cincinnati Ohio.

Office 596 Fifth Street, Cincinnati, at Rail Road Depot Building.

Railroad Car Works.

THE Undersigned are prepared to manufacture for Railroad Companies, Passenger, Baggage, Cattle, Freight, Gravel and Hand Cars, also Baggage Barrows and Freight Trucks.

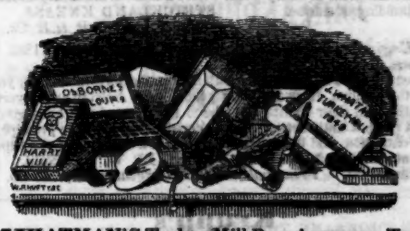
F. HUNGERFORD & CO.

Maysville, Ky., Sept. 29, 1853.

Hufty's

Engineers, Architects and Draftsmen's

STATIONERY EMPORIUM.



WHATMAN'S Turkey Mill Drawing paper, Tracing paper, Plan and Profile, Protractors, Drawing Pins, Faber's, Jackson's and other makers' Pencils; Field, Level, and Memorandum Books of various patterns; Mathematical Instruments, Tape-lines, Mouth Glue, Cross Section paper, Triangles, Sabel Brushes, Gum Bands, Maiden Gum, Red Tape, Ink, Inkstands and Sand, Water Colors, Pallets, Patent Binders for letters, Portfolios, etc., together with a general assortment of Stationery and Blank Books.

All goods packed with care, and forwarded to any part of the United States.

JOSEPH HUFTY,
Successor to H. L. Lipman,
139 Chestnut st., Philadelphia.

May 15, 1851.

Buffalo Car Works.

TOWNSEND & COIT, Proprietors.

WE are now erecting an extensive Establishment for the manufacture of Railroad Cars, which will be furnished with all the conveniences known to the business, and ready for operation by the 1st day of June next, at which time we will be ready to execute orders for Baggage, Box, Platform and Cattle Cars, of the most approved style and finish. Meantime we are prepared to make contracts for work to be furnished during the summer and fall.

TOWNSEND & COIT, Buffalo.

February 22, 1853.

A. N. GRAY, Cleveland, O.,

RECEIVER AND FORWARDER of Railroad Iron, Chairs and Spikes

Also, Cars, Locomotives, and all kinds of Machinery for Railroad purposes.

Office next door to the Custom House, Main st.

January 12, 1853.

SIXTY MILES DISTANCE SAVED!—ONLY THIRTY-SIX AND A HALF HOURS TO CHICAGO.

MICHIGAN SOUTHERN RAILROAD LINE, carrying the Great Western U. S Through Mail—FOR CHICAGO AND ST. LOUIS, MILWAUKEE, RACINE KENOSHA, and all Ports on Lake Michigan.—Through from Buffalo to Monroe IN FOURTEEN HOURS WITHOUT LANDING.

The following magnificent and unequalled steamers from the line between Buffalo and Monroe:

EMPIRE STATE. J. WILSON, Commander, leaves Buffalo Mondays and Thursdays.

SOUTHERN MICHIGAN, A. D. PERKINS, Commander, leaves Buffalo Tuesdays and Fridays.

NORTHERN INDIANA, I. T. PERATT, Commander, leaves Buffalo Wednesdays and Saturdays.

One of the above splendid steamers will leave the Michigan Southern Railroad Line Dock, at 9 o'clock, P. M. every day, (except Sundays) and run direct through to Monroe without landing, in 14 hours, where the Lightning Express Train will be in waiting to take passengers direct to Chicago in 8 hours; arriving next evening after leaving Buffalo.

THE LAKE SHORE RAILROAD.

runs in connection with this line, forming the only continuous line of Railroad to Chicago and the Illinois River.

For Through Tickets, by New-York and Erie and Buffalo and New-York City Railroad via Buffalo, or by the People's Line of Steamboats, Hudson River Railroad via Albany and Buffalo, apply to

JOHN F. PORTER, Agent,
No. 193 Broadway, corner Day-st., N. Y.

MONTREAL & NEW YORK AND Plattsburgh and Montreal RAILROADS.

☞ *Open through from Plattsburgh to Montreal.* ☜

Passenger Trains leave Montreal for Plattsburg at 6 30 a.m and 5 p.m., arrive at 8 a.m, and 7.30 p.m.

Leave Plattsburg for Montreal 7.30 a.m. and 4 p.m., arrive a. 10 a.m. and 6.50 p.m.

Trains connet at Montreal with Steamers for Quebec, and the St. Lawrence and Atlantic Railroad for Sherbrooke and intermediate station.

Trains connect at Mooers Junction with Northern (Ogdensburgh) Railroad for Ogdensburgh and Lake Ontario Steamers for Lewiston, Niagara Falls and Upper Canada, and all ports on the Western Lakes.

Trains connect at Plattsburgh by Steamer to Burlington with Rutland and Burlington Railroad and connecting lines for Troy, Albany, New York and Boston, and all intermediate stations. Also with steamers for Whitehall to the Saratoga and Washington Railroad, and connecting lines of road to Troy, Albany and New York.

Passengers will find this route unequalled for comfor and dispatch, and attended with less fatigue and dely than any other. It possesses moreover the advantage of a short Ferriage of only *fifteen minutes* across the River St. Lawrence at Caughnawage, which has never been known to freeze, and can be confidently relied upon at all seasons of the year.

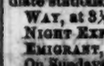
☞ Freight Tarins run daily each way.

For particulars see Freight and Passenger Tariff.

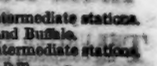
BAGGAGE *checked through.*

H. W. NELSON, Superintendent.

New York and Erie R. R.



PASSENGER TRAINS
leave Pier foot of Duane street, as follows, viz:—



DAY EXPRESS, at 6 a. m. for Dunkirk and Buffalo.

MAIL, at 8¼ a.m. for Dunkirk and Buffalo, and all intermediate stations. Passengers by this train will remain over night at any station between Binghamton and Corning, and proceed the next morning.

ACCOMMODATION, at 12½ p.m. for Delaware and all intermediate stations.

WAY, at 3¼ p.m. for Delaware and all intermediate stations.

NIGHT EXPRESS, at 5 p. m. for Dunkirk and Buffalo.

EMIGRANT, at 6 p.m. for Dunkirk and all intermediate stations.

On Sundays only one Express Train—at 5 p.m.

The Express Trains connect at Dunkirk with the Lake Shore Railroad for Cleveland, Cincinnati, Chicago, etc., and at Buffalo with first class splendid steamers for Cleveland, Sandusky, Toledo, Detroit and Chicago.

CHAS. MINOT, Sup't.

Notice to Contractors.

WARSAW & ROCKFORD RAILROAD.

THE preliminary Surveys are now complete for the First Division, (about 120 miles) from Warsaw, through Nauvoo, Oquawka, Keithsburgh, Rock Island and to Port Byron, including both Rapids of the Mississippi, and the location progressing. The character of the country is such, and the surveys so near to any location that will be made, that Contractors can satisfy themselves of the value of the work as well now as hereafter. Proposals are asked at the Office of the Company in Warsaw, Hancock County, Illinois, for the construction of the whole or part of the road, either by quantities or by the mile. Contract will not be made before the 1st of January, 1854, and only so soon thereafter as advantageous offers can be made. The Company are willing to make general contract, for cash or for cash and securities.

The route of the road is generally in the valley and second bottoms of the Mississippi, and the work can be completed very rapidly. The road is important as one of the improvements of the navigation of the Rapids, and also from its several (two at least) connections with other railroads.

WM. H. ROOSEVELT,
President.
W. R. KINGSLEY,
Engineer.
T. S. O'SULLIVAN,
Consulting Engineer.

Warsaw, Nov. 17, 1853.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.

Jan. 20, 1849.

Railroad Iron.

2,000 TONS FIRST CLASS WELSH RAILWAY IRON, to be made to any ordinary T pattern required by the buyers, and for shipment from Newport, Wales, in December, January, and March next, apply to the undersigned, for many years connected with the largest house in the trade.

JOHN H. AUSTIN & CO.,
44tf 2 Ingram Court, Fenchurch street London.

A Valuable Farm in Illinois for Sale.

SITUATED in the *Village* of *Seward's Point* in *Montgomery* County 7¼ miles North of *Hillsborough*, about 36 South of *Springfield* the Capital of the State, about 18 West of the *Illinois Great Central Railroad*, about 4 or 5 North of the *Alton & Terre Haute Railroad* and about 18 miles West of the *intersection* of the two, containing 80 acres of rich prairie land.

Apply by letter or in person to
S. S. ROCKWELL,
No. 15 South Second str. Williamsburgh.

To Railroad Companies, Machinists, Car Manufacturers, etc., etc.

CHARLES T. GILBERT,

NO. 80 BROAD ST., NEW YORK,

IS prepared to contract for furnishing at manufacturer's prices—
Railroad iron,
Locomotive Engines,
Passenger and Freight Cars,
Car Wheels and Axles,
Chairs and Spikes.

Orders are invited; and all inquiries in relation to any of the above articles will receive immediate attention

India-Rubber Railroad Car Springs, etc.

THE UNITED STATES CAR SPRING COMPANY, having completed their new Factory, are manufacturing and furnishing to *Railroad Companies*, and *Car Builders*, *RUBBER SPRINGS* of the best quality, on the most favorable terms.

Also, McMullen's superior *WHITE HOSE*, not only for Railroads, but all other purposes, and of any size or thickness required.

Office No. 25 Cliff street,
Aug. 10, 1853. 3m New York.

Notice to Contractors.

COVINGTON & OHIO RAILROAD.

PROPOSALS will be received, at the Office of the Covington and Ohio Railroad, in Covington, until the 15th of December next, for the graduation and masonry of about seventy-five miles of the above road; of which, the eastern portion, comprising fifty miles, lies next west of Covington, and the western portion, consisting of about twenty-five miles, lies between the Kanawha River and the mouth of Big Sandy. A large share of the work to be let—including bridging and tunnelling—is heavy and desirable, and is well worthy the attention of responsible contractors. The western sections of the above work are now ready for examination, and the eastern portion will be prepared for inspection by the 8th of December.

Further information may be obtained on application at the company's offices at Covington and Guyandotte

By order of the Board,
CHARLES B. FISK,
Chief Engineer.

N. B.—The Board of Public Works, of Virginia, under whose direction the Covington and Ohio Railroad is to be constructed, on State account, will meet, at Covington, on the 15th of December, above named, for the purpose of receiving and acting on the proposals that may then be offered.

Nov. 10th, 1853.

To Railroad Companies.

COLLINS' PATENT
VENTILATORS,
FOR
Ventilating all kinds of
PUBLIC AND PRIVATE BUILDINGS
Railroad Cars, Depots, etc.

THE Subscribers would invite the attention of the public to the above celebrated Patent Ventilator. This Ventilator is the best one now known of, for giving a pure air in rooms, and ejecting all foul air. It has been adopted by all the principal Railroad Companies and Car Factories, and is extensively used for private dwellings, and for the cure of smoky Chimneys cannot be excelled. Manufactured and for sale by

BAKER & WILLIAMS,
No. 406 Market st., Girard Row,
Sole Agents for Pennsylvania.

CERTIFICATES.

Engineer Department P.R.R., Altoona, Feb. 8, 1853.

This is to certify that Messrs. BAKER & WILLIAMS, of 406 Market st., Philadelphia, have furnished a large number of Collins' Patent Galvanized Iron Ventilators for the P. R.R. Co., and that they have given every satisfaction, acting fully as represented. I consider them as a necessary appendage to an Engine House. We have them in use thirteen inches, and two feet diameter, acting equally well. So well satisfied am I of their usefulness, that the Engine Houses we are about building will be supplied with them at every point where a draft is necessary to free building of smoke. STRICKLAND KNEASS,
Principal Assistant Engineer P. R.R. Co.

Engineer Depart. P. R.R. Co., Pittsburgh, May 12, 1853.

Messrs. BAKER & WILLIAMS,

Dear Sirs—The 23 Collins' Patent Ventilators furnished by you for the Engine House at this place, have been in use several months and their merits have been fully tested and have given most perfect satisfaction; being constructed on true principles of Ventilation, and the workmanship is of a substantial and superior character. Yours truly, OLIVER W. BARNES,
3m40 *Principal Assistant Engineer P. R.R. Co.*

Krupp's
CELEBRATED CAST STEEL,

Which obtained the Council Medal at the London Exhibition in 1851.

Warranted unapproachable as to Quality and Size.

PLATERS and other Cast-Steel Rollers, of any dimensions not exceeding six feet long by eighteen inches diameter.

Piston Rods and Shafts for Steam Engines, not exceeding 3000 lbs. in weight.

Railway and other Axles, Cranks, Springs and Tyres.

Cannon, Rifle and Gun Barrels.

Mint and other Rolling Mills

Orders received by

THOMAS PROSSER & SON,
28 Platt street, New York.
Sole Agents for the United States.
Nov. 19, 1853.

To Contractors.

CHIEF ENGINEER'S OFFICE, N. & P. R. R. Co.,
Norfolk, Oct., 13, 1853.

SEALED PROPOSALS will be received by the undersigned at this office from the 3d, until the 15th day of December next, at noon, for the *graduation and masonry of* 62 *miles* of the Norfolk & Petersburg railroad between the city of Norfolk and *Warwick Swamp in the county of Sussex.*

The line will be divided into sections of about 4 miles, and bids will be received for one or more of said sections.

Maps and profiles of the line will be ready for inspection and specifications with forms of proposals may be had of the undersigned on and after the first day of December.

Payments will be made in current money during the progress of the work in proportion of four-fifths of the amount due.

As soon as practicable after the examination of the proposals, those to whom the work will be allotted will be duly notified, and if deemed necessary required to give bond with satisfactory security for an amount not exceeding one-tenth of the amount of work to be done.

The company reserves the right to accept such proposals as in their judgment will secure the prompt and faithful execution of the work according to contract, or reject all, if none are satisfactory.

The line is easy of access, the country through which it passes is of mild climate and abundant in supplies. *Postage on all communications must be prepaid.*

W. MAHONE,
Chief Engineer.

Small Rails.

THE SUBSCRIBERS manufacture and keep constantly for sale, *Light Rails* of the most approved patterns, weighing 22, 25, 28, 40 and 50 lbs per yard, suitable for Colliers, Miners, Quarrymen and Contractors, or for turn outs, depot and branch tracks. CHARLES E. SMITH & Co.

1744 Fairmount Iron Works, Philadelphia.
CHAS. E. SMITH, HENRY MORRIS,
THOS. T. TASKER, WISTAR MORRIS.

Drawing.

B. BLANDOWSKI, Topographical and Ornamental Draughtsman and Designer. Maps accurately drawn, enlarged or reduced from notes or copies. Ornamental designs for decorations, furniture, fences and ornamental foundry work. Architectural designs. Drawings from nature carefully prepared.

REFERENCES. Messrs. Miller and Freund, Ligneous Marble Works, corner of Franklin and Center streets, New York. Also H. V. Poor, Esq., Editor Railroad Journal, and Zerah Colburn, Assistant do.

Address, care of Railroad Journal, 9 Spruce street New York.

Henry I. Ibbotson,

MANUFACTURER OF
FILES AND SAWS,
Warranted of superior quality.
Office and Warehouse, 218 Pearl st., New York.

Book and Job Printing.

The undersigned have added to the PRINTING ESTABLISHMENT of the "RAILROAD JOURNAL," an extensive OFFICE for *BOOK AND JOB PRINTING*, which they are now prepared to execute in the BEST manner, and with DISPATCH. They respectfully solicit from RAILROAD COMPANIES, orders for the PRINTING of *Exhibits Time-tables, Circulars, Tickets, &c., &c.*

J. H. SCHULTZ & CO.

New York April 9, 1853.